NETWORK WORLD

THE WEEKLY FOR LEADING USERS OF COMMUNICATIONS PRODUCTS & SERVICES VOLUME 4, NUMBER 36 SEPTEMBER 7, 1987

▶ *EXCLUSIVE*

AT&T studies new services

Surveys users on need for four advanced digital offerings.

BY BOB WALLACE
Senior Editor

BASKING RIDGE, N.J. — AT&T is surveying select customers to gauge demand for four new digital transmission services, including two high-capacity switched digital services, and T-1 and Dataphone Digital Services (DDS) that provide greater capacity and compatibility with European standards.

The survey, a copy of which *Network World* obtained last week, describes in detail four proposed services: Accunet Switched 64 Restricted, Accunet Switched 384, Accunet T1.5 with Clear Channel Capability and 64KBPS Dataphone Digital Service with Clear Channel Capability.

AT&T acknowledged the survey, entitled "New Digital Data Transmission Services: Service De-

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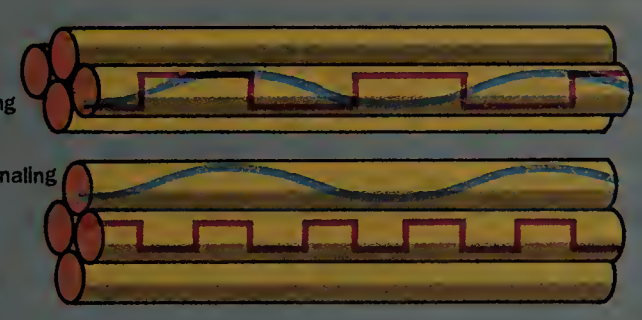
AT&T readies new digital services based on common channel signaling



AT&T is evaluating demand for four digital services that use common channel signaling (CCS). With CCS, call-signal data used to establish and maintain circuits is removed from traffic-bearing channels and carried separately. This allows adjacent channels that are otherwise restricted to 56K bit/sec to support clear channel 64K bit/sec.

SOURCE: *NETWORK WORLD*

▶ *HIGH-SPEED SERVICES*

AT&T T-1 discount plan bows

Accunet T1.5 users can earn cost cuts.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — Responding to increased competition in the T-1 market, AT&T said last week it will offer volume discounts to users of its Accunet T1.5 services.

Customers that agree to spend between $50,000 and $2 million monthly on T-1 service over a span of one to five years qualify for price cuts under AT&T's discount plan, which was filed Aug. 31 with the Federal Communications Commission.

Discounts vary depending on usage and length of commitment, according to Victoria Wright, Accunet product marketing manager. A customer that commits to $2 million worth of T-1 service per month over a five-year period will earn the largest discount, she said.

Accunet T1.5 is a point-to-point dedicated digital service that operates at 1.544M bit/sec. Users can multiplex the T-1 line into 24 64K bit/sec or 48 32K bit/sec channels to support voice, data and video communications.

AT&T is currently the only major T-1 provider not offering a volume discount plan, and the company acknowledged in its FCC filing

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SPECIAL SECTION: IBM

IBM's Hancock: candid commander

As president of IBM's Communication Products Division (CPD), Ellen Hancock is awash every day in a sea of high technology — and she appears to love every minute of it. More so than many computer industry executives, Hancock displays a genuine fascination with the inner workings of the technologies she manages.

Hancock, 44, took over CPD's reins from Terry Lautenbach, who became group executive of the company's information systems and communications group.

Where Lautenbach's style is staccato, Hancock's is legato. Her insightful comments are accented with

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▶ *ARTIFICIAL INTELLIGENCE*

Expert system monitors nets

PC tool eases management.

BY MARY LINEHAN
Staff Writer

MELBOURNE, Fla. — As part of an overall plan to automate and simplify network management, Harris Corp. has developed a personal computer-based expert system that helps nontechnical staffers troubleshoot the company's IBM Systems Network Architecture network.

Harris, a manufacturer of communications, data processing and electronics equipment based

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NETWORK LINE

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NEWSPAPER

▶ *HYBRID NETWORKS*

GE officials speak out on AT&T deal

BY KARYL SCOTT
Washington, D.C. Correspondent

FAIRFIELD, Conn. — After months of secrecy, General Electric Co.'s top networking officials last week for the first time revealed details of the $300 million network contract the company awarded to AT&T in March.

Stanley Welland, manager of corporate telecommunications, told *Network World* that economic and technological considerations prompted GE to embrace the AT&T-proposed hybrid Electronic Tandem Network/Software-Defined Network (ETN/SDN). "The hybrid architecture will give us greater functionality and will be more cost-effective than a pure ETN or SDN," he said.

GE officials declined to discuss the General Electric

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▶ *CONTRACTS*

MCI sells United on virtual net

IBM support aided marketing effort.

BY MICHAEL FAHEY
Senior Writer

CHICAGO — United Airlines, Inc. has selected MCI Communications Corp.'s VNET virtual network service to carry the airline's internal voice traffic. MCI last week described the contract award as "the first major success to result from cooperative marketing efforts on the part of MCI and IBM."

Neither MCI nor United Airlines would provide terms of the contract, except to say that the agreement was reached in June and that VNET will be used to support more than 100 United Airline locations.

IBM and MCI officials declined to provide details of the cooperative marketing effort. But according to Dave Nevers, a senior telecommunications engineer at United Airlines and a member of the selection committee for the VNET contract, IBM, one of United Airlines' largest hardware vendors, submitted a document to the airline citing its ability and willingness to support the MCI virtual network offering.

AT&T and US Sprint Communications Co. were also being considered as virtual network providers, Nevers said.

An IBM spokesman said that, in general, the company's policy in dealing with end users is to treat MCI as it would any long-distance carrier. "MCI is just another vendor," he said. IBM acquired a 17% share of MCI in 1986, making it the carrier's largest stockholder.

Nevers said that when the request for proposal for the virtual net service was first issued a year ago, it included Westin Hotel Co. and The Hertz Corp., owned by the Allegis Corp. conglomerate, which also owns United Airlines. Allegis has since announced plans to divest itself of the hotel chain and car rental giant, he said.

Nevers said he did not know what effect the divestment plan would have on the overall virtual network contract.

The original plan to use VNET to support 100 United Airlines locations is already under way and slated for completion in October, he said.

The locations to be supported were formerly served by AT&T's Enhanced Private Switched Communications Service (EPSCS) and services from Satellite Business Systems, which was acquired by MCI in 1986.

When evaluating the carriers' virtual network services, United Airlines' selection committee developed a checklist of 250 criteria to aid the process. "We assigned

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Network World wants to make its news coverage even better, and for that we ask your help. If you know of an interesting event that just occurred or is about to occur, please call. We'd also like to know how you optimize your networks. Call Editor Bruce Hoard toll free at (800) 343-6474.

▶ *AT&T COMPUTERS*

AT&T unveils computers, networking enhancements

BY JOSH GONZE
Staff Writer

PARSIPPANY, N.J. — AT&T introduced a microcomputer and a high-end minicomputer laden with network potential at a press conference here last week that was also used to release a torrent of enhancements to existing communications products.

AT&T renewed its commitment to the computer industry with the announcement of the 3B4000 minicomputer and 6386 Workgroup System microcomputer, and followed that with the introduction of enhancements to the AT&T Starlan, Information System Network (ISN) and the company's electronic messaging service, AT&T Mail.

The 3B4000 is a departmental computer capable of processing up to 43.4M instructions per second and supporting up to 300 users when fully configured. Positioned at the high end of the 3B product line, the machine features a modular, multiprocessor architecture and has a list price beginning at $187,000.

Networking interfaces provided for the 3B4000 include an X.25 interface, an LU 6.2 facility, an interface for the Transmission Control Protocol/Internet Protocol, and emulation of IBM 3270 terminals and 3770 remote job entry (RJE) workstations. The X.25 interface software allows the 3B4000 to connect to public packet-switched networks such as Telenet or to link directly to other computers through dial-up or dedicated telecommunications circuits.

The LU 6.2 facility is a software development tool for putting IBM's

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▶ *PC EXPO*

Novell unwraps server

Reveals low-end NetWare versions.

BY MARY PETROSKY
West Coast Correspondent

NEW YORK — In a series of announcements at PC Expo here last week, Novell, Inc. unveiled an Intel Corp. 80386-based local network server and low-end versions of its NetWare network operating system designed for small local nets. The company also entered into an alliance with Excelan, Inc. that widens the Transmission Control Protocol/Internet Protocol offerings for Novell networks.

Novell's newest server, the NetWare 386A, boasts twice the speed of its 80286-based 286A server. Both servers were developed by Santa Clara Systems, Inc., a wholly owned subsidiary of Novell. The 386A's 1M byte of memory is expandable to 4M bytes and can support up to 2G bytes of disk storage. The server also includes two 32-bit expansion slots, five 16-bit slots and one eight-bit slot.

The server supports IBM Personal Computers, XTs, ATs and compatibles and the full IBM Personal System/2 line. It can be used with Advanced NetWare 286 and SFT NetWare Levels I and II.

The server is available now with 1M byte of memory, a 1.2M-byte floppy disk drive and a 42M-byte fixed disk drive for $6,295. A version with an 80M-byte fixed drive is $6,995.

Novell expects to release a version of NetWare that takes advantage of the sophisticated features of the 80386 processor in the second half of 1988, said Craig Burton, Novell's vice-president of corporate marketing and development.

Following through on its promise to provide versions of NetWare designed for different user needs ("New NetWare revealed," *NW*, Aug. 10), Novell introduced two low-end versions of its operating system. Entry Level Solution (ELS) NetWare 286 Level I, Version 2.0a, supports up to four users; and ELS NetWare 286 Level II, Version 2.1, supports up to eight users.

ELS Level I is priced at $595 and works with three types of adapters — Ethernet, Arcnet and the IBM PC Network card for the Micro Channel Bus — but has no internetworking capabilities. The Level II software, priced at $1,395, sup-

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DATA DELIVERY/ NET MANAGEMENT

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3Com's sophisticated token-ring networking products wrestle sales away from such token-ring kings as IBM. **Page 17.**

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Clarification: The Aug. 17 article "Consolidation at work in LAN mart" stated that in 1986, Ungermann-Bass, Inc. had revenue of $98.7 million and Novell, Inc. had revenue of $93.8 million. The figures supplied to *Network World* represented income derived from local-area networks. They did not include revenues from consulting, network design and network installation.

Correction: The story "Ethernet vendors explore twisted pair" in our Aug. 17 issue erroneously stated that SynOptics Communications, Inc.'s original Lattisnet product violated Federal Communications Commission regulations on radiation. We regret the error.

▶ *IBM, ERICSSON*

Firms probe integration

BY BOB WALLACE
Senior Editor

STOCKHOLM, Sweden — IBM and Ericsson said last week they will jointly explore how IBM processors and data management software can be integrated with Ericsson's AXE central office switches to support advanced voice and data services.

Ericsson officials said the object of the agreement is to develop technology supporting a so-called intelligent network. The nonexclusive pact covers "architecture-definition activities involving IBM systems and Ericsson switches, connectivity tests between IBM equipment and Ericsson's AXE digital central office switch using standard interfaces and product opportunity evaluation."

John Meurling, vice-president of strategic planning for Ericsson Telecommunications' public telecommunications group, said IBM products would serve as Signal Control Points (SCP) and as the Signal Transfer Points (STP) in an out-of-band signaling subnetwork.

Out-of-band signaling would be used to establish calls across a public telecommunications net without tying up valuable transmission facilities. It enables carriers to offer users enhanced services such as virtual networking and advanced 800 services.

Meurling said IBM software would serve as an SCP data base containing all necessary customer routing and service information. The STP passes call establishment and breakdown information from central office to central office across the long-distance network.

Meurling said the first order of business for the two companies is to define an interface that links the STP to the AXE central office switch. "BELLCORE already has a specification for the STP-to-switch interface," he noted. "In all probability, we will be talking to BELLCORE and using their current specification as a model. Once we have defined the protocol that meets this requirement, each company will then design the software needed to create that interface."

The top Ericsson strategist said that once the software writing effort is completed, the new interface will be rigorously tested to ensure it provides interoperability between the IBM hardware and the Ericsson central office switch.

An Ericsson spokesman said any "intelligent network products" that emerge from the joint effort would be sold separately, but each vendor would guarantee that the systems will interoperate. Neither vendor would say when products will be available.

The spokesman said intelligent network systems would likely first be marketed to Post, Telegraph and Telephone administrations and other telephone companies outside the U.S.

In a prepared statement, IBM said it is "discussing its approach to intelligent networks with several switch manufacturers, telephone companies and PTTs on a worldwide basis." The statement hinted that these talks could lead to agreements in such areas as connectivity testing, protocol definition and standardization, and product opportunity research.

▶ *LOCAL NET AUTOMATION*

FBI installs $133m PC network

BY PAULA MUSICH
Senior Editor

WASHINGTON, D.C. — As part of a $133 million automation project, the Federal Bureau of Investigation is installing personal computer networks at remote sites that will be linked via gateways to mainframes at regional data processing centers.

The Intelligent Workstation (IWS) project calls for the installation of more than 8,000 workstations, 700 personal computer networks and 640 gateways at agency sites. Hardware in the project will conform to the Department of Defense's Transient Electromagnetic Pulse Emanations Standard (TEMPEST) security standards, and data transmitted over the network will be encrypted.

McLean, Va.-based systems integrator Iverson Technology Corp. was awarded the IWS contract in July after a competitive bidding process. Iverson won out over Unisys Corp. and Centel Corp.

Most of the local network installations are being handled through a subproject known as the Field Office Information Management System (FOIMS), which falls under the IWS umbrella, according to FOIMS

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▶ *CONFERENCE PREVIEW*

DECworld network links hotels, ocean liners

Temporary net uses microwave, fiber.

BY MARY LINEHAN
Staff Writer

BOSTON — Digital Equipment Corp. will kick off DECworld '87, a conference extravaganza beginning here this week, by cutting over a network supporting seven Boston hotels, the World Trade Center here and two ocean liners.

The theme of this year's conference, which will be held from Sept. 8 to 18, is "The Network at Work." DEC President Ken Olsen will open the show by linking the show network to the company's worldwide net, Easynet, which supports roughly 15,000 computer systems and 70,000 users in 39 different countries.

According to Bob Carty, marketing manager for DEC's network and marketing group, Easynet is the largest nondefense global data network in the world.

The Ethernet network, which will encompass 300 systems and approximately 1,000 terminals, will bridge the Trade Center with smaller networks at the Marriott Copley, Sheraton Boston, Westin, Park Plaza, Lafayette, Hilton and Marriott Long Wharf Hotels, via microwave, and with the Queen Elizabeth II and Starship Oceanic, via fiber.

"The important thing is that the network we set up will implement all of the major networking technologies — baseband, broadband, fiber, microwave and satellite — and all of that technology will be transparent to the end user," Carty said.

The network will support primarily DEC equipment, but IBM Personal Computers, IBM 3725 front-end processors, a Vitalink Communications Corp. satellite dish and network bridge products, and Wang Laboratories, Inc. VS minicomputers will also be incorporated.

> "The important thing is that the network we set up will implement all of the major networking technologies, and all of that technology will be transparent to the end user," DEC's Carty said.

"This network is very similar to what a large, multilocation, multinational company would have in place. It is a good demonstration of Digital's networking capabilites," Carty said.

"Demonstrations will be broken into vertical industries — wholesale, retail, government, military, financial and manufacturing — and the individual applications in each specific market will be tied together by this enterprisewide network," he continued.

The wide-area network is already in place, so setting up for the conference only required pulling the pieces of the local-area network together. The networks in the Trade Center and the hotels were set up over the last few weeks, Carty said, but the Starship Oceanic arrived Sept. 6 and the Queen Elizabeth II is scheduled to arrive the day before the conference opens.

The ships have been chartered for the entire conference to provide accommodations for DEC customers, consultants and media representatives attending the conference, as well as for additional space for seminars and classes.

The Queen Elizabeth II is a quarter of a mile long, 15 stories high and has 960 cabins; the Starship Oceanic has 560 cabins.

Despite the luxurious accommodations, DEC spokesman Bob Kucharavy maintains that "this is not playtime." Kucharavy said that each executive in attendance will take part in a two- or three-day program of seminars, symposia and demonstrations geared for his or her company's needs.

Kucharavy said that this year's DECworld is a merger of DEC's annual DECworld conference in the U.S. and of DECville, which was held in Europe last year. In past years, the DECworld and DECville conferences have lasted a week.

DEC estimated that attendance at the international conference would near 40,000.

▶ *HOUSE CLEANING*

US Sprint to sell microwave net

BY PAM POWERS
Senior Editor

KANSAS CITY, Mo. — US Sprint Communications Co. said last week that it is nearing completion of its fiber network and will sell off its older microwave and satellite equipment in which the company has invested roughly $1 billion.

US Sprint also moved to assuage user worries over billing problems, issuing a promise to its five million customers that, as of the end of the month, all bills will be current and will reflect credits for recent payments and misdialed calls.

Up for sale are 56 switches with digital and analog telephone components, more than 400 microwave towers, seven satellite earth stations and 9,670 miles of analog and digital transmission routes. "We're able to sell what is essentially the old GTE Sprint [Communications Co.] network because we have most of our fiber network in place now," explained US Sprint spokesman Mike Furtney.

US Sprint is nearing completion of a nationwide fiber network that, all told, will have cost the company $3 billion. Currently, over 70% of the carrier's traffic runs over that network, and Furtney said by year-end 1987 that figure will rise to 90%.

"The fact that we've put the old network up for sale demonstrates we weren't kidding when we said we'd have the fiber net completed by the end of this year," he noted.

Potential buyers

Furtney said potential buyers for the old equipment include other transmission companies, long-distance resellers, independent local telephone companies, state and federal agencies, utilities and large corporations.

He acknowledged that much of the equipment "has been around for a while" and may not fetch as much as $1 billion.

Robert Self, president of the New York-based consulting firm Market Dynamics, Inc., questioned whether US Sprint could sell all the equipment, which includes some outdated analog gear, but he said the carrier will probably profit from the deal, no matter what the final price. "That equipment costs US Sprint nothing now in out-of-pocket expenses," Self said. "They've already paid for it, so whatever they get will just maximize revenue for them."

Separately, US Sprint committed to issuing timely and accurate bills with the help of an improved billing system. Billing problems have plagued the carrier since it started operations as a joint venture between United Telecommunications, Inc. and GTE Sprint in July 1986. In its most recent quarter, US Sprint took a one-time $76 million charge against earnings for uncollectible bills.

In a letter sent to all business and residential customers, US Sprint President Robert H. Snedaker said that by Sept. 30, the carrier "should be sending statements on time," and that "forthcoming statements" will reflect customer payments made within the last 30 days and credits for calls incorrectly dialed.

"While the vast majority of our customers have been receiving bills on time," Snedaker acknowledged in the letter, "some [customers] have experienced delays."

Furtney said the company has taken a number of steps to combat billing problems, including installing new software and hardware and hiring additional personnel to

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▶ *ON-LINE NETWORK MANAGEMENT*

Tandem melds net control tools

Unified scheme provides single point for network control.

BY JOSH GONZE
Staff Writer

CUPERTINO, Calif. — Tandem Computers, Inc. is expected tomorrow to announce four software packages designed to help users centrally manage networks of Tandem transaction processors.

The products, to be unveiled as part of Tandem's new Distributed Systems Management (DSM) line, provide a single view of a distributed, on-line network. The new packages include an operations console facility that allows a user to monitor and control a network from one terminal, a monitor that reports on random network events such as hardware failures, a programming interface that allows developers to tie applications into the DSM architecture and a distributed naming service.

"This is centrally driven direction, so you can control and drive your distributed network from one place much better than you could before," said Jack Gates, national director for Electronic Funds Transfer and Point of Sale network consulting at Peat Marwick Main & Co. in Dallas.

The net management products will ship in December, as will Tandem's recently announced low-end processors, the NonStop EXT10 and EXT25. Tandem expects the relatively low cost of those processors, announced in August 1986, to fuel an increase in the number of nodes on Tandem networks. The company reasons that users will demand centralized network management to avoid a rise in network management costs.

The console software, dubbed Viewpoint, is the jewel in the DMS crown. Viewpoint consists of software residing at both the central site and at each remote site. The central-site software collects management data sent by network monitoring packages and integrates that data so it can be accessed from either a Tandem terminal or a personal computer emulating a Tandem terminal.

Viewpoint modules residing on remote systems gather and route performance data collected by Measure, an existing Tandem program that gathers statistics on network and processor performance on a sampling basis. Viewpoint also gleans data from Tandem's existing Network Statistics System, which reports on processors and lines in a Tandem network.

Previously, every time a Tandem network operator wanted to access information from different management systems, it was necessary to log on to each system.

In addition to Viewpoint, Tandem will introduce the Event Management System (EMS), software that runs on each remote system in a Tandem network to collect information on specific events, such as a hardware malfunction. The EMS program will also route the collected information to Viewpoint.

Tandem will also publish format and protocol specifications to allow other application developers to write software that works in the DSM environment. The Subsystem Programmatic Interface (SPI), a set of standard formats and protocols for management information exchange, is mainly a set of programming tools for writing event management programs inside application software. The SPI-based application management programs will send their data to EMS, which will transmit the data to Viewpoint.

The company also announced a Distributed Name Service (DNS) providing a single data source containing the multiple names used by network and system components.

Tandem is taking a conciliatory stance toward IBM's NetView. "We recognize that one of our major marketing scenarios is Tandem being managed from NetView," said Roger Mathews, network software product manager at Tandem. Tandem already has a NetView interface for its communications access software, he said, but lacks a usable gateway based on that interface. "The next thing that we need, software-wise, is a package that uses our SNA management interface to do pass-through of events from Tandem to the NetView system."

FBI installs $133m PC net

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Project Manager Paul Ballesteros. FOIMS is designed to automate many investigative and administrative tasks for FBI field agents.

Under FOIMS, the FBI will set up Fox Research, Inc. 10-Net personal computer nets linking IBM Personal Computer ATs and Intel Corp. 80386-based workstations at most of its 59 field offices and many of its 400 satellite offices. The size of each local net will vary depending on the number of workers in an office, said Dennis Williams, a supervisory special agent responsible for distributing and configuring the workstations.

One pilot installation at FBI headquarters here is supporting 16 workstations, and another in the Alexandria, Va., field office is supporting nine workstations. Fox Research estimates that a single network can support between 40 and 50 workstations, Williams said.

Information Technologies, Inc.'s LinkUp 3270 Gateway will be installed on each network to provide access to IBM or IBM-compatible mainframes housed in at least four regional DP centers. The regional data centers will be linked together in an IBM Systems Network Architecture network.

The gateway, which includes a 3270 SNA/Synchronous Data Link Control adapter and software, supports up to 32 concurrent host sessions. The adapter and software are installed in a nondedicated network workstation, which emulates an IBM 3274 cluster controller. The gateways are linked to IBM 3725 or equivalent front-end processors at the field offices and regional DP centers that feed traffic to the hosts, according to Williams. Network workstations accessing the gateway emulate IBM 3278 terminals and can perform file transfers.

"FOIMS will provide automation support to field offices via a distributed information processing architecture," Ballesteros said.

Applications that will be run locally on the 10-Net local networks will include word processing, data base management systems, spreadsheets, image processing, graphics and electronic mail, Williams said.

Fox networking software, which provides users with shared access to files, supports E-mail functions, network management, a print spooler, file sharing, remote 3270 access and bridging to other remote local networks.

Field offices will have access to a set of host applications developed by the FBI's Systems Development Department that monitor time and attendance as well as case management for tracking the investigative work of field agents, Williams said.

Systems Development, a part of the FBI's Technical Services Division, is using Software AG of North America, Inc.'s Adabas DBMS to develop the host applications.

The FOIMS project began in 1978, when field agents "had little or no access to on-line systems and little or no local processing," Ballesteros said. "Because investigative work must be documented, we had an overabundance of manual files. The support staff used index cards to keep track of individuals. To go back and find out if we had anything on John Smith in a given office was a problem. Finding information on John Smith in a different field office was an even bigger problem."

Although a contract for the project was awarded in 1982, a protest was lodged that eventually led to the FBI's decision to start the bidding process all over again.

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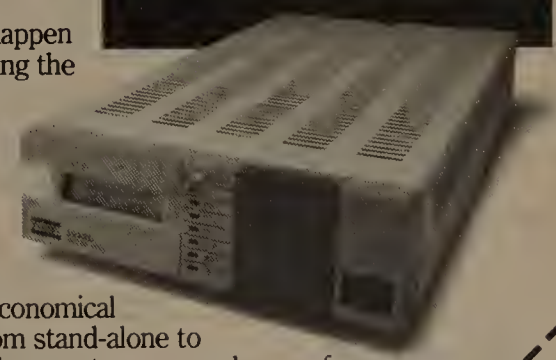

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▶ *ACQUISITION PROPOSAL*

MCI offers $160 million for GE worldwide telex division

MCI/GLOBCOM merger to hold 40% of market.

BY PAM POWERS
Senior Editor

WASHINGTON, D.C. — MCI Communications Corp. last week announced its intent to pay $160 million for RCA Global Communications, Inc. (GLOBCOM), a division of General Electric Co. that reportedly holds 22% of the international telex market.

Under terms of the proposed acquisition, subject to regulatory approval, MCI would merge GLOBCOM's international record carrier operations with MCI International, which sells voice, data and telex services in international markets.

Forty percent of the mart

According to MCI spokeswoman Kathleen Keegan, the merged operations would, at the outset, hold 40% or more of the international telex market.

Keegan said MCI and GE expect to finalize plans by Sept. 30, at which time MCI will submit its intentions to the Federal Communications Commission and the Department of Justice for regulatory approval.

MCI intends to complete the acquisition by the end of the year, according to Keegan.

GE will not release earnings figures for GLOBCOM, which markets private leased lines and high-speed data transmission services, in addition to telex and voice services.

But analysts said the division operates at a profit and is about the size of MCI's international division, created when MCI bought Western Union International's telex operations in 1982.

Less than enthused

Nonetheless, John Malone, president of Eastern Management Group in Parsippany, N.J., noted that, "GE has been less than enthused with the GLOBCOM property for some time now.

"They are probably favorably inclined to selling it off," he said.

Victor Krueger, a vice-president with San Jose, Calif.-based Dataquest, Inc., estimated that the acquisition will make MCI the largest player in the international telex business. "Globcom presents an attractive market proposition for MCI," he said.

But there is some question about the viability of the telex market.

Malone noted that competing technologies such as facsimile and computer-based message systems pose a threat to telex, as they are a "more efficient media for the business population."

Still, about 100 million telex messages are transmitted annually, he said, and MCI will gain a large customer base through GLOBCOM.

Combined efficiency

"MCI and GLOBCOM will be able to combine their operations and reduce staff to create efficiency," Malone said.

"GLOBCOM could prove to be a cash cow," he continued. "This could be a highly profitable venture for them. It looks good to me, and I imagine Wall Street will find favor with it as well."

▶ *NCR COMTEN*

NCR ends two product lines

Discontinues X.25 switching and modem series.

BY PAM POWERS
Senior Editor

ST. PAUL, Minn. — NCR Comten, Inc. said last week it will discontinue sales of modems and private X.25 packet-switching equipment in order to focus its resources on the IBM-compatible front-end processor market.

Company spokeswoman Michelle Wolff declined to say whether the two product lines, which include four modems, X.25 switches and network management systems for private packet networks, have been profitable for the company.

She also would not say how many customers would be affected.

Discontinued modems

NCR Comten's modem line included 4.8K bit/sec modems for switched and leased lines, and 9.6K bit/sec and 14.4K bit/sec private-line modems.

Wolff said the company will honor the five-year warranties that come with those modems and, beyond that, will provide on-site maintenance and repair for those modems on a contract basis.

Arrangements for supporting customers with packet-switching gear are

See page 41

GE speaks on AT&T deal

continued from page 1

Telecommunications Network (GETN) contract before the Federal Communications Commission approved a controversial tariff AT&T filed for GETN. The FCC approved the tariff on Aug. 19 only after AT&T agreed to make GETN-type private network services available to the public.

GETN will use a combination of AT&T-owned central office switching facilities and GE-owned central office switches configured in tandem to provide integrated voice and data communications to 100,000 end users in 700 locations around the U.S.

This all-digital network will allow GE to aggregate its voice and data traffic and realize economies of scale, Welland said. GETN will also permit the dynamic allocation of bandwidth to suit the company's changing communications needs.

Under the AT&T contract, GETN will utilize a variety of private-line and public-switched telecommunications services such as Megacom, Megacom 800, SDN, WATS and Accunet T1.5. Some 30 T-1 lines will comprise the net backbone.

AT&T rolled out a new bandwidth management feature for this contract called Digital Tandem Switching Service, which will route GE traffic from interoffice T-1 trunks to the appropriate AT&T services.

"GETN gives us a single point of contact for network management, improved disaster recovery and the opportunity to integrate new technologies such as Integrated Services Digital Network when they become available," Welland said. The GETN network control center will be located in Princeton, N.J.

While GE will not be able to reconfigure the network without the assistance of AT&T, "we will be able to study our traffic patterns and reroute traffic in a way that wasn't possible with the old system. If we need to change our mix of services, we will have to work through AT&T," Welland said.

The AT&T contract is only a part of the GETN project, which was undertaken more than a year ago, Welland said. The first phase of GETN involved the consolidation of GE's and RCA Corp.'s networks shortly after GE acquired RCA in June 1986.

The AT&T contract will tie RCA's Digital Switch Corp. DEX 400 electronic tandem switches, which will work with AT&T 4ESS central office switches to route all GETN traffic.

The combined network will support GE's 250 million minutes of traffic per year and a universal dialing plan. AT&T SDN service will handle the net's overflow traffic. SDN is a public-switched service that provides many of the same features as a private net.

Vintage 1964 net replaced

GETN replaces GE's vintage 1964 Dial-Com network, which relied on Bell operating company 1ESS tandem-switching facilities and Centrex service for analog voice transmission. GETN far surpasses the old network by integrating voice and data in an all-digital network, Welland said.

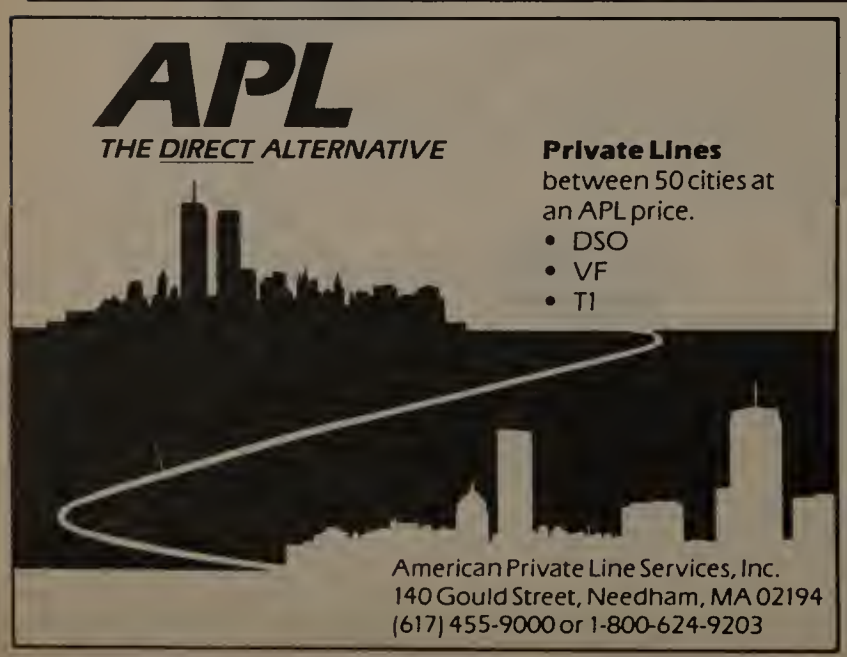
"The old Dial-Com network was far too costly and technologically obsolete," said Welland, who declined to reveal the cost of operating the older network or the anticipated cost savings with GETN.

GE has a multitude of local- and wide-area data networks that will make increasing use of GETN. "We have 30 to 40 data networks within various divisions, and we hope to aggregate some, if not all, of that traffic on GETN for the maximum utilization of our transport facilities," Welland said. "We expect our data traffic to increase between 10% and 30% over the next five years."

"We're a heavy IBM/SNA shop. We also have a lot of Honeywell equipment," he said. "Our objective is to make the GETN protocol and application independent. The telecommunications department will be a bandwidth supplier." The network intelligence that will facilitate this protocol transparency will be developed by GE's MIS department.

Joaquin Gonzalez, vice-president of Enterprise Network Strategies at Gartner Group, Inc. in Stamford, Conn., described GETN as "an unusual network in that it relies heavily on central office-based switching, rather than customer-controlled switching.

Future uses of GETN are expected to include telemarketing, video teleconferencing and electronic mail.



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INDUSTRY UPDATE

AT&T appoints Marx to executive VP post

AT&T appointed William B. Marx Jr. to the post of executive vice-president of marketing and customer operations for the Network Systems Division. Formerly a group vice-president for the Data Systems Division, Marx replaces Paul M. Villiere, who is retiring. Richard A. McGinn, vice-president of strategy for the Data Systems Division, will assume Marx's product management responsibilities.

CONSOLIDATION CONCERNS

Data Switch CEO talks acquisition

Gilbertson discusses changes six months after T-Bar/Data Switch union.

BY PAM POWERS
Senior Editor

The recent rash of mergers and acquisitions in the communications industry has brought to the fore some concerns about the effects of consolidation on both the companies involved and their customer bases.

While it is often true that combining two companies can create economic efficiencies and greater market penetration, the merger process involves difficult internal changes that can make or break the new company.

Data Switch Corp.'s acquisition of rival T-Bar, Inc. six months ago provides a typical example of one company's efforts to incorporate the operations of another in a smooth and cost-effective manner.

Data Switch is a Shelton, Conn.-based vendor of channel switches, channel extenders, matrix switches, network control systems and performance measurement systems.

President and Chief Executive Officer Robert Gilbertson said the company had plans to acquire another vendor "because we felt we had a superior concept, but we didn't have the customer base, the distribution channels or the size to fund the research necessary to make that concept work." Data Switch netted $3 million on sales of $42 million in 1986.

Robert Gilbertson

Gilbertson said that T-Bar, which markets a similar line of products, was on Data Switch's list of five potential acquisition candidates when it received a hostile takeover bid by John Beall & Company, Inc. Because T-Bar had no defense against that offer, Gilbertson said, the company was eager to negotiate with a white knight such as Data Switch.

Gilbertson said the two companies' customers were surprisingly unconcerned about the merger plans. "We braced ourselves for a number of calls and actually made several ourselves as soon as the deal was final. All they said was it sounded like they might get better service and we would probably have more money to spend on research and development. They were happy about it."

Data Switch planned to merge with T-Bar and begin operating as a single entity as quickly as possible. Even before Data Switch had fully acquired T-Bar's stock, the companies had set up nine task forces to determine how to merge various departments such as sales, service, manufacturing and MIS. Within seven days, Gilbertson said, the sales and marketing forces were merged into one unit.

But Gilbertson admitted the plan was optimistic. "It takes time for everyone to learn the products and systems belonging to the other company."

Morale problems, to be expected

See page 12

NETWORK SCANDAL

Net fraud case ends in mistrial

San Diego's Telink trial cut short.

BY MARY LINEHAN
Staff Writer

SAN DIEGO — A federal judge declared a mistrial last month in the Telink, Inc. scandal case, which stemmed from allegations of fraud in the awarding of a $24 million contract to replace this county's communications network.

U.S. District Judge Earl B. Gilliam's declaration, which came 17 weeks into the trial, was based on a June 24 interpretation of the federal mail fraud statute by the Supreme Court.

The Supreme Court's rendering reversed nearly a decade of lower court rulings that allowed the mail fraud statute to be broadly interpreted in the prosecution of public corruption cases.

In the 7-2 decision, which was later applied to the Telink case, the court said that mail fraud may not be used to prosecute defendants for "defrauding citizens of their intangible rights to honest and faithful services of governmental employees and agents of governmental agencies" and limited the statute to cases in which money or property are lost.

"The indictment alleged mail fraud, wire fraud and racketeering," said Lantz Lewis, assistant U.S. attorney and prosecutor in the Telink case.

"The trial under way focused on the charges of mail fraud only. The remaining charges were set aside by the judge for future determination," Lewis said.

The prosecution alleges that the contract for the countywide microwave telephone system was steered to Anaheim, Calif.-based Telink by former County Communications Director Abraham Stein. Stein allegedly provided prostitutes to Hilario Gonzales, former director of the county General Services Administration, who in turn used his influence to help win the contract for Telink.

Other defendants in the trial are James Linder, Telink marketing director; Donald Woodaman, president of Telecommunications Design Corp., a consulting company on the contract; and Robert Schreiber, a vice-president of Tele-

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INDUSTRY EYE
PAM POWERS

US Sprint cleanup shows spunk

When Robert H. Snedaker took the helm of US Sprint Communications Co. two months ago, his self-proclaimed crusade was to rid the carrier of its back room problems, and thus far, he has progressed nicely along that track.

A few weeks ago, the company started the unpleasant process of informing former GTE Sprint Communications Corp. users they could claim refunds for unanswered calls for which they were erroneously billed. While that could deflate its profits by more than $13 million, US Sprint seems determined to deal with its past mistakes. By offering free service, the carrier hopes to turn disgruntled former users into new, pleasantly surprised users. US Sprint found the best way to swallow a bitter pill.

Now the company has cornered an alleged group of thieves who have made a $20 million business, at US Sprint's expense, out of selling unauthorized long-distance codes. In the first quarter, US Sprint's profits were sapped by about $19 million from toll fraud. Calling these alleged offenders to task is, therefore, no small victory.

However, it might be a victory more in principle than in practice.

As US Sprint acknowledged, there's a good chance big-time abusers such as these just don't have $20 million to turn back over to US Sprint. And the carrier's cost of tracking down and prosecuting abusers will probably offset some of the losses recouped as well.

But the fact that such a large and seemingly professional ring of code abusers could be brought to justice should itself make a dent in the practice. And any users who have unwittingly purchased codes through such operations are now certain to question their sources. A US Sprint spokesman indicated that the company has several more raids up its sleeve in its heated effort to slash the staggering costs of toll fraud.

While sources tell us US Sprint's billing problems are far from being solved, the company last week made a public commitment to churn out accurate and timely bills. Under Snedaker, US Sprint has spunk.

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NETWORK WORLD

An IDG Communications Publication

Data Switch CEO talks

continued from page 9

from any merger or acquisition, hampered progress, too. Gilbertson said the company laid off only a small portion of the combined staff — some 30 people from T-Bar who worked the second and third shifts.

But T-Bar's president and chairman both retired.

"Obviously, there's redundancy at that executive level," said Gilbertson. He added that the new company is composed of an equal number of T-Bar and Data Switch managers.

But employees still felt uncertain about their positions. To combat that, Gilbertson said he held three or four breakfasts a week during which employees could learn about company plans. Gilbertson also separately interviewed T-Bar's top 75 people "to listen to how they would do things and make clear that the merger process is a team effort."

By April, Data Switch had shed 150 to 200 employees through attrition. "We have zero unemployment in Connecticut, so when we told people they would have to work 20 miles away, many left and went elsewhere, which worked out well. We identified and held onto those key supervisors and engineers we wanted to stay with the company."

> Gilbertson separately interviewed T-Bar's top 75 people "to listen to how they would do things and make clear that the merger process is a team effort."

Gilbertson said the cost savings associated with consolidating two companies did not kick in until June. Revenue in the first quarter of this year soared to $23 million from $9 million last year, but income took an expected dip to a loss of $400,000, as compared to a gain of $228,000 in 1986. In the second quarter, when Gilbertson said he expected to see some evidence of cost savings, Data Switch's losses widened to $703,000.

Revenue for the second quarter, which totaled $21 million, also fell short of the company's expectations because the combined sales force was not effectively selling both product lines.

"We thought the sales force would immediately start selling both companies' products, but it took almost six months to get them retrained and out there rooting up new prospects," Gilbertson said.

Now, he said, the T-Bar sales force is actively selling most Data Switch products, and vice versa. Data Switch decided to continue to sell both its own and T-Bar's line of channel switches and matrix switches, and it has guaranteed customers of both companies five years of service.

> "We thought the sales force would immediately start selling both companies' products, but it took almost six months."

Sales of those products, coupled with strong sales in the channel extender and control system lines, have made Gilbertson "quite sure that we will have an excellent third quarter."

Only Intellinet, Data Switch's performance monitoring system, still presents a problem for the company. Data Switch has spent time and money to integrate the system with T-Bar's matrix switch, the Galaxy Plus. But sales remain below expectations.

That is because Intellinet is a sophisticated and expensive sell for the sales force, which is more likely to "pick low-hanging fruit," Gilbertson said. "But we're finding ways to boost the sales effort behind Intellinet."

Now, six months down the road, Gilbertson is candid about his assessment of the merger process.

"It hasn't been exactly smooth, but almost everything is in place now," he said. "The staffs have been moved and combined; the sales force is selling most of the product line; and we have eliminated a lot of the costs of combining two companies.

"Now, it's just a matter of tightening areas of weakness," he continued. "We have to get the MIS systems together and boost performance monitoring sales. It's a lot of work for a lot of people."

Net fraud case ends in mistrial

continued from page 9

com Consultants, the lead consulting firm on the contract.

"It is always a setback when you invest four months' time and expense in prosecution and see it declared a mistrial," Lewis said. "But we won't know if it has actually hurt the quality of our case against the defendants until we go through pretrial motions and see what the judge will allow with the new standard."

Judge Gilliam has set the new trial date for Sept. 15.

Five other defendants, all either Telink employees or consultants hired by the county, are awaiting trial. In all, 11 men were indicted in the case.

The 11th defendant, Robert S. Pierre, executive vice-president of Telecommunications Design, pleaded guilty earlier this year to mail fraud and agreed to testify for the government.

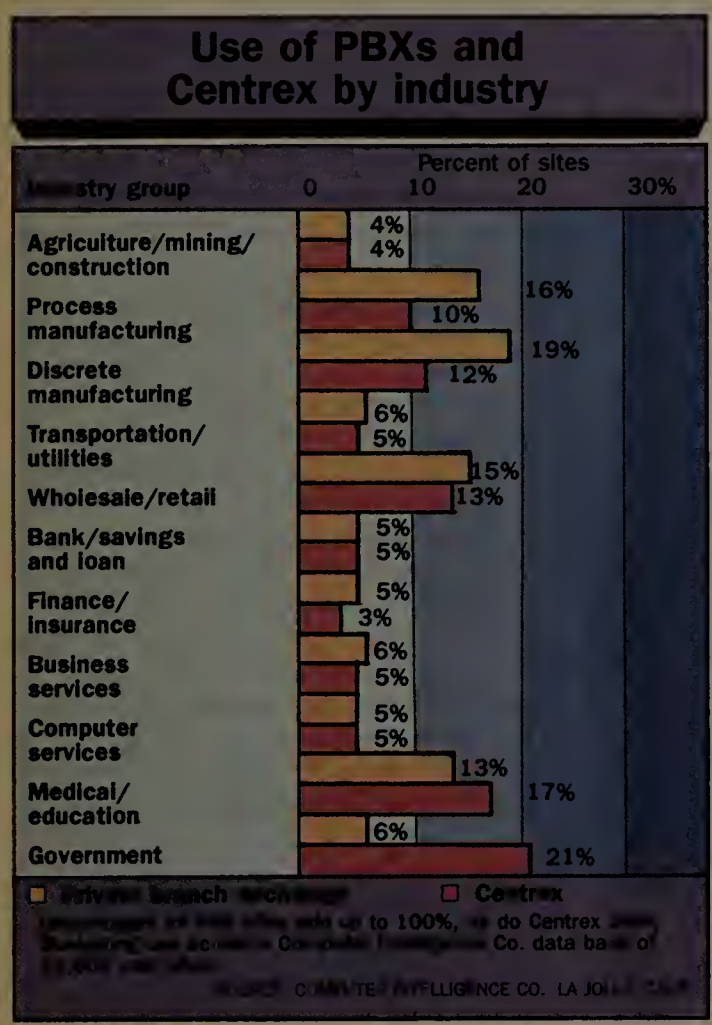
The county contract was awarded to Telink in 1982 and rescinded in 1983 after a grand jury investigation revealed allegations of bribery and bid rigging.

Since that time, a new competitive bidding process has been instituted, and the contract to replace Pacific Bell service with a private backbone network was awarded to Contel Business Networks.

TELECOM TRENDS

COMSAT celebrates Satellite Act's 25th

Communications Satellite Corp. last week celebrated the 25th anniversary of the Communications Satellite Act, which was signed into law by President John F. Kennedy on Aug. 31, 1962. Passage of the act led to the creation of COMSAT, which is the founder, principal investor in and U.S. signatory to the International Telecommunications Satellite Organization and the International Maritime Satellite Organization.



▶ *AT&T*

Private net cutover passes in U.S. House

PBX-based net cuts costs, eases management tasks.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — The U.S. House of Representatives has successfully cut over a new $16 million telecommunications system expected to save an estimated $30 million over the next 10 years, according to House officials.

Replacement of existing Chesapeake and Potomac Telephone Co. of Washington, D.C. (C&P)-provided Centrex service with an AT&T-designed private net was prompted by the desire to reduce telephone costs and increase network management capabilities, according to William Kinter, assistant director of the Office of Telephone Services in the House.

The new telecommunications system consists of two AT&T System 85 private branch exchanges, 15,000 new telephones and 17,000 new lines. Installation involved the complete rewiring of five House office buildings with fiber-optic cable and twisted-pair copper wire.

Fiber was used to interconnect the two PBXs, the five House office buildings and switching closets between floors. Additional fiber was installed for future data networking applications, Kinter said. New copper wiring was installed between wiring closets and individual telephones.

The network provides telephone service to 435 members of Congress and their staffs. It is currently being used only for voice communications, but the telecommunications department is examining future data applications.

"We evaluated various systems and estimated that continued use of Centrex would cost $56 million over 10 years, while a private net

See page 14

▶ *SALES STRATEGY*

Mitel's 0% finance plan bows

BY BOB WALLACE
Senior Editor

BOCA RATON, Fla. — Mitel, Inc. last week introduced a 0% financing program designed to boost sales of its older analog SX-100 and SX-200 private branch exchanges.

Under the program, the switch maker will provide 0% tax leases on a limited number of the PBXs. By providing a 0% tax lease, as opposed to a capital lease, Mitel will enable its customers to lease the PBXs at no interest until payments equal the purchase price of the system. Once the lease has been paid, the user owns the system.

Financial arrangements for the 0% program will be coordinated through Mitel Finance Corp., a wholly owned subsidiary of Mitel.

The vendor said the program would run until Dec. 31 or until all 0% leases had been issued. Mitel would not say how many leases are available.

Although the program is offered through all parties that sell Mitel PBXs, a vendor representative said 95% of the SX-100 and SX-200 switches are sold through the Mitel Qualified Dealer network or through supply houses.

CROSS TALK

BOB WALLACE

Tymnet looks to bypass for relief

Tymnet/McDonnell Douglas Network Systems Co., operator of one of the largest value-added networks and a heavy user of Bell operating company-provided local access lines, said last week it plans to bypass the BOCs if a Federal Communications Commission proposal requiring VAN operators to pay access charges for these lines is enacted.

Tymnet's bypass strategy, as detailed last week, may be flawed. Both Tymnet and Telenet Communications Corp. have said access charges would send service prices rocketing skyward.

Tymnet and Telenet together recently held a pair of meetings, with 50 of each firm's largest users attending, to urge these corporations to express their opposition to the FCC plan ("FCC proposal unites users," *NW*, Aug. 31).

Clint DeGabrielle, marketing and field operations vice-president for Tymnet, explained that the VAN provider would employ a number of different bypass technologies to provide services to users in the event that the VAN access charges are imposed. He said the scope of the company's bypass efforts would be determined by the level of access charges the company would have to pay.

Tymnet's contingency plan calls for the use of Digital Termination Systems (DTS), its Tymstar very small aperture terminal service, links to four metropolitan cable television systems as well as FM sideband radio.

However, each of Tymnet's BOC bypass alternatives has limitations, and together, the technologies would likely not cover as wide a geographic area as is now served by the network. The VAN boasts dial access at 650 locations across the country.

Once, DTS systems were billed as the best solution for users' last-mile transmission needs, but many DTS pioneers have relinquished their system authorization and construction permits to the FCC because of a lack of user demand for the services.

Although firms such as Local Area Telecommunications, Inc. in New York and Wang Communications, Inc., a subsidiary of Wang Laboratories, Inc., currently offer bypass services, other providers are few and far between. Bypass providers usually offer their services only in limited geographic regions, primarily in major metropolitan areas.

DeGabrielle said Tymnet is already connected to four CATV systems. Shortly after the divestiture of AT&T, many users looked to CATV system operators as providers of bypass services to users in large metropolitan areas. The cable franchisers would pass data over the same broadband cable network that delivers television programming to residences. Regulatory wrangles and the fact that franchisers were primarily concerned with program delivery combined to limit use of CATV systems for data transmission drastically.

Tymnet's plan to include its VSAT service, Tymstar, as part of its bypass strategy also appears flawed. Announced in January 1986, Tymstar is not now commercially available. Tymnet has not been a major player in the VSAT industry.

Although a low-speed data service over VSAT seems to be a workable alternative to public packet service, many Tymnet users, who currently use dial lines to access the network, may

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▶ *REGIONAL HOLDING COMPANIES*

Home fiber test slated

BY MARY LINEHAN
Staff Writer

ST. LOUIS, Mo. — Southwestern Bell Telephone Co. has said it will test its first residential application of fiber-optic network technology.

The fiber trial is scheduled to begin in October 1988 and continue into mid-1989. Between 50 and 100 homes in Leawood, Kan., a suburb of Kansas City, will be linked in a local fiber loop, according to Myron Keller, area manager of loop technology planning for Southwestern Bell.

Single-mode fiber will be used to connect the homes to the Corporate Woods Central Office in the trial, for which AT&T Network Systems Group will supply equipment. The serving switch is an AT&T 5ESS switch.

"Our economic projections show that, by the early 1990s, we will be able to provide the customer with all-fiber loop service for the same cost as copper," Keller said. "Right now, we just want to get started testing an all-fiber network and learn more about what kinds of services we'll need to provide."

Tymnet looks to bypass

continued from page 13

not want to pay for network hardware and software or deal with VSAT installation and management.

The FM sideband alternative to local access lines may be Tymnet's strongest option. In this scheme, FM radio stations could broadcast data to specific sites with necessary receive equipment.

Although used by only a few customers, this option would likely be the most successful of the four bypass schemes because it would serve users with sites that are not located in a major metropolitan area.

Cutover passes in U.S. House

continued from page 13

would cost approximately $26 million for the same period. The new system is expected to pay for itself in three years," Kinter said.

The House telephone system was cut over during the summer congressional recess to avoid disruptions to end users. The actual cutover took less than two days and went smoothly, Kinter said.

"With a system of this size, which is equivalent to a network for a medium-sized town, you expect some problems," Kinter said. "A week after the cutover, the system is up and running, and most of the glitches have been corrected."

One of the most important features of the new network is the Centralized System Management (CSM) capability, which gives the telecommunications personnel in the House greater control over telephone service than Centrex, according to Christine Stelter, AT&T Federal Systems Division project manager.

"CSM allows the telecom staff to manage traffic more efficiently, to monitor standard traffic parameters on all trunks and to change features through simple software modifications," Stelter said.

"People move around here a lot," Kinter said, "and that creates problems for the telephone staff. Elections are held every other year, and as a result, people are always changing assignments and offices. With the old system, if someone moved, we had to get a technician out here to rewire the telephones. With our new Universal Wiring Plan, all we have to do is make some minor software changes."

Much of the traffic on the House network involves long-distance communications between members of Congress and their home districts. The System 85s are programmed to perform automatic route selection and least-cost routing, choosing between the various WATS services the House uses. AT&T's, MCI Communications Corp.'s and US Sprint Communications Co.'s WATS services and AT&T's foreign exchange service are among the services the House currently uses.

"We also multiplex a T-1 line that runs from the C&P serving office to our System 85, into 24 channels to handle our heavy volume of calls," Kinter said.

AT&T was awarded a 10-year contract for engineering, equipment and maintenance in December 1985, although the contract wasn't signed until June 1986. AT&T competed with Northern Telecom, Inc., Rolm Corp. and C&P for the contract.

C&P won a 10-year, $14 million contract to install a phone system for the U.S. Senate in 1985. The cutover from the Senate Centrex service to the new network took place in May 1987.

The Senate system consists of a Northern Telecom PBX and 8,000 lines serving about 100 senators and staffs.

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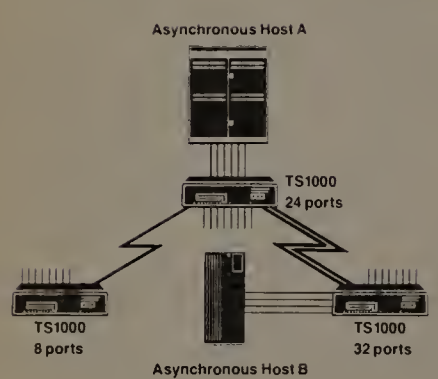

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DATA DELIVERY/ NET MANAGEMENT

"IBM really has captured mind share with its NetView and NetView/PC announcements. The company has put a stake in the ground, and other vendors interested in the network management market are now on the defensive.

Gerald Mayfield
Vice-president
DMW Group, Inc.
Stamford, Conn.

SUNGARD RECOVERY SERVICES

T-1 tool speeds recovery

Infostream NX4600 does two networking tasks for Sungard.

BY PAUL KORZENIOWSKI
Senior Editor

WAYNE, Pa. — A firm that provides disaster recovery services recently installed a T-1 multiplexer from Infotron Systems Corp. that doubles as a matrix switch, replacing manual patch panels and simplifying network problem determination.

Sungard Recovery Services provides backup computing services from data centers in San Diego, Philadelphia and Chicago. In the event of a failure, customers access these sites through one of eight remote network nodes linked to centers via high-speed AT&T digital lines.

When AT&T began offering T-1 services, Sungard decided to implement the 1.54M bit/sec digital facilities between its Philadelphia and Chicago centers. "We wanted to reduce the cost of our dedicated and dial backup lines," said John Malone, network systems engineer at Sungard.

At the time, the T-1 multiplexing market was just emerging, and there were only a handful of companies selling T-1 multiplexers. Sungard evaluated equipment from Infotron, Codex Corp. and Timeplex, Inc.

Infotron won the bid. Sungard already used Infotron statistical multiplexers and was satisfied with the products and the company's service. Sungard was also impressed with the fact that the Infostream 1500 T-1 multiplexer conformed to carrier T-1 standards, such as D4 framing. "We wanted to be sure the product worked with AT&T's T-1 service," Malone said.

In the two years since the multiplexers were installed, Sungard's business and its networking requirements changed, outgrowing the capacity of the Infostream 1500's two T-1 lines. In the summer of 1986, Sungard decided to

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DATA DIALOGUE
PAUL KORZENIOWSKI

Network leapfrog is risky game for airline copycats

Imitation may be the sincerest form of flattery, but in some cases, it presents drawbacks. In business, imitation can quickly wipe out a competitive edge.

The airline industry, for example, is spending hundreds of millions of dollars in a high-stakes game of network leapfrog. The object of the game is to increase each company's share of the computerized reservation system business.

This business represents the best-known case of how a company can use its network resources to increase profits. More than 10 years ago, American Airlines, Inc. developed its Sabre reservation system, which provided travel agents with on-line access to American flight information. The system helped to increase the number of American airline tickets sold and was a principal reason why American grew to become one of the industry's dominant carriers.

Since the middle of the 1970s, American has continued to leverage its network for greater corporate profits. For example, in 1985, American's computer services contributed $143 million to the company's $335 million profit.

These healthy profits did not go unnoticed by competitors, who are busy trying to upgrade their networks so they can better serve travel agents. Even though the various airlines have the same goal, the means they are using to achieve it differ.

American hopes to preserve its edge by placing intelligent workstations on agents' desks and linking them to its host systems. The company is also in the final stages of installing an X.25 packet-switching network, which may provide the flexibility needed to meet rapidly changing market demands.

United Airlines, Inc. has decided to use IBM's LU 6.2 protocol as the foundation for its reservation system. The company has embarked on one of the most ambitious LU 6.2 projects in the country.

Texas Air Corp. is trying to meld the computing power of its two subsidiaries, Continental Airlines Corp. and Eastern Airlines, Inc. In addition to upgrading its reservation systems, Texas Air plans to install a nationwide T-3 backbone network and resell extra network capacity to other users.

Last year, Northwest Airlines, Inc. invested more than $140 million in Trans World Airlines, Inc. (TWA) in return for co-ownership of TWA's reservation system. The two companies are now in the process of linking their data centers. Once that work is completed, the companies plan to market network products, such as front-end processors, and services to users such as hotels and car rental agencies.

Delta Airlines, Inc., which has the smallest share of the reservation system market, is placing local-area networks at the various travel agencies to boost its market share.

The recent investments represent substantial risks. As the airlines expand, they may face a dearth of skilled technicians. Most reservation systems use IBM's Transaction Processing Facility (TPF), a teleprocessing system capable of quickly processing a high volume of transactions. Less than 50 companies currently use TPF, and competition for skilled TPF programmers has always been fierce. To imple-

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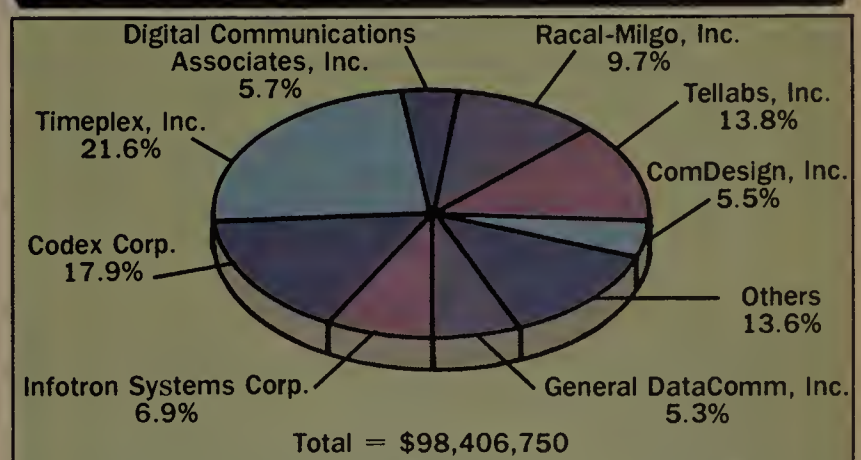
1986 worldwide mid-range statistical multiplexer market



Total = $98,406,750

NOTE: Others include Case Communications, Inc., Gandalf Data, Inc., Halcyon Communications, Inc., Infinet, Inc., Micom Systems, Inc., Paradyne Corp., Scitec Corp. Ltd. and Teltone Corp.

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

WIDE-AREA NETWORKING

HP offers support to X.25 net users

BY MARY PETROSKY
West Coast Correspondent

ATLANTA — Demonstrating its expanding emphasis on network support, Hewlett-Packard Co. said it is opening a wide-area network center here to provide planning, implementation and operation services for users of its X.25 packet net.

HP announced a series of X.25 products and services in a major rollout earlier this year ("HP readies powerhouse X.25 network package," *NW*, Jan. 19).

The Atlanta center is one of three such support centers HP plans to open worldwide, according to Chuck Storla, customer network center manager. Bristol, England, has been chosen as the site for a European center; a site has not yet been decided upon for a Far East center, he said.

Unlike HP's regional offices, the wide-area net center is specifically for users of HP's X.25 Private Packet Network. "We're a supplement to what's already available," Storla said. "The difference is the scope of the project. We're focused strictly on wide-area networks," he said.

Service prices will vary depending on the complexity of the network and the services requested. Network planning and implementation services are available now, and network operations services will begin Dec. 1.

Network leapfrog

continued from page 15

ment their planned network expansion, airlines will have to increase their TPF staffs and may not find enough programmers to complete all the planned projects.

Also, the airlines are competing in a mature, stagnant market. John Testa, vice-president at the Denver office of the DMW Group, Inc., said the number of reservation terminals appears stagnant at approximately 20,000 and could decline in the next few years. One reason is that large companies have moved into the travel reservation market and forced many small independent agents out of business.

The business plans for the five key players are based on increasing the number of agents using their reservation systems. Such a task will be difficult because the airlines will have to take business away from competitors rather than luring new customers.

In saturated markets, price cutting often prevails. Managers should be cautious about the payback models used to justify current investments. The price for their services may decrease dramatically.

Airlines are currently making substantial networking investments and expect a return on those investments. Obviously, not every airline will be able to increase its share of the reservation system market, and there will be only a few winners in this game of leapfrog.

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In recent months, ads for networking software have all begun to sound alike. Each promises a unique solution to your networking problem (even before the vendor knows what that problem really is). Each tells you the product is easy to use (that is, of course, if everyone is thoroughly trained). And that when you buy the product, you'll get all the technical support you'll need (but they don't tell you how long you must wait to get it).

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WOLLONGONG

Introducing Network Communications Software For Skeptics.

Speedy recovery

continued from page 15

look for new equipment and examined half a dozen vendors' wares, including T-1 multiplexers from Timeplex, Network Equipment Technologies, Inc. and Codex.

Sungard opted for another Infotron product, the Infostream NX4600, because it "was the only product that could function as a matrix switch as well as a T-1 multiplexer," Malone said.

The product supports up to 24 T-1 lines and operates like a matrix switch, capable of dynamically allocating 4,000 ports from an operator console.

Sungard was, in fact, a beta test site for the Infostream NX4600. Malone said all of the communications equipment — modems, front-end processors and multiplexers — in the San Diego data center was connected to the 4600 without any major problems. The company experienced a minor problem synchronizing the frequency levels of some older modems with the matrix switch.

Besides the multiplexing function, the Infotron 4600 replaces manual patch panels Sungard once used to establish connections to individual pieces of communications equipment. Malone said the cost of a matrix switch is typically 25% higher than manual patching, but it is worth the price.

"With a manual system, a customer has to disconnect and repatch the new equipment," Malone said. "That job is time-consuming." With a matrix switch, changes can be made dynamically from an operator console.

Locating a problem is also easier. "At our San Diego site, we have only one cable under our floor," Malone said.

"In our other centers, there are hundreds of cables under the floor, so locating a cable problem is a management nightmare," he added.

Sungard has expanded its use of the NX4600, bringing the total sites now equipped with the device to 10. Most of the sites are using only the product's multiplexing capability. Sungard is slowly replacing its manual patch panels with matrix switching equipment at its Chicago and Philadelphia sites.

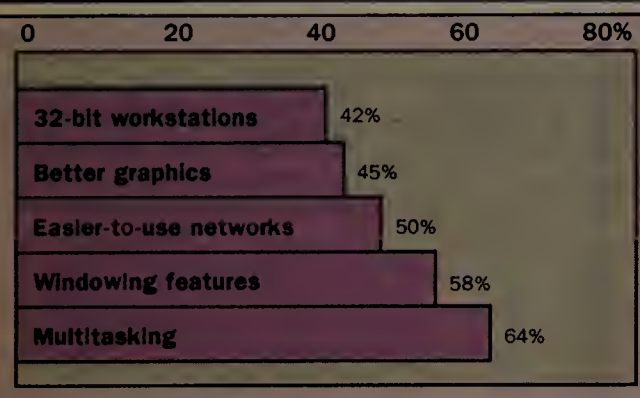
"It takes time to move from a manual patch center to a matrix switch," Malone said.

LOCAL NETWORKING

"Fault tolerance is a part of the same kind of user need that is driving the network management trend. Hooking various departmental LANs together will increase the problems that occur and visibility of the network. It becomes more obvious if a network administrator is doing his job effectively.

Clare Fleig
Director of systems research
International Technology Group
Los Altos, Calif.

Financial users rate workstation features



Computer users in the financial community were asked to rate features they would find valuable in a workstation priced between $4,990 and $13,900. They were allowed to choose as many of the five features listed as applied.

SOURCE: COHN & WOLFE, NEW YORK

TOKEN-RING MARKET

Users say performance gives 3Com net edge

Firm grabbing sales from IBM, other vendors.

BY MARY PETROSKY
West Coast Correspondent

Amidst a rising wave of demand for token-ring networks, 3Com Corp. is wresting sales from IBM and other token-ring suppliers by offering more sophisticated token-ring networking products.

Users such as Waste Management, Inc., based in Oak Brook, Ill., and Toronto-based law firm Tory, Tory, DesLauriers & Binnington said they chose 3Com's token-ring products because they provide better performance than IBM's offerings.

3Com's first token-ring adapter began shipping about a year ago, and the company currently ships more than 1,000 adapters per month, according to product manager Bridget McNiel. Token-ring product shipments represent 5% to 10% of the volume of 3Com's Ethernet adapter shipments, McNiel added.

IBM would not release figures on its Token-Ring Network shipments.

Some large companies have hesitated to use 3Com's token-ring products to date because the company did not have a formal licensing agreement with the technology's inventor, Olof Soderblom, McNiel said. If a vendor does not pay licensing fees, a reseller or user could be held liable for the fees, she added.

3Com recently cleared the licensing hurdle, however, when it announced it had licensed the U.S. and foreign patents for token-ring technology from Soderblom. Previously, the company had been producing token-ring products under a more limited agreement.

An IBM shop with mainframes, System/36s and Personal Computers, Waste Management wanted token-ring technology because of Big Blue's commitment to use it to connect its full range of computer systems, said Jim Schmieder, senior systems analyst for the firm. Schmieder is in the company's Northeast regional office in Southfield, Mich., one of the company's six regional offices in North America.

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PRODUCT DEBUT

Gateway adds Token-Ring net

Expands PC LAN line.

BY PAULA MUSICH
Senior Editor

IRVINE, Calif. — In yet another move away from its proprietary networking roots, personal computer networking vendor Gateway Communications, Inc. last week announced an IEEE 802.5 IBM Token-Ring-compatible local network.

Gateway added the token-ring offering to the Ethernet network, Systems Network Architecture and X.25 gateway offerings it unveiled earlier this summer as part of a new, more aggressive strategy to broaden its markets ("Gateway drops proprietary net stance," *NW*, Aug. 3).

"The token-ring offering is directed at the IBM marketplace, and Ethernet is directed primarily at university and campus organizations," said Walter Schramm, Gateway's vice-president of marketing and sales.

"G/Net is the third highest installed network in the world, but we wanted end users to be able to purchase any one of the three networks through our distributors and feel comfortable with that choice," he said.

According to International Data Corp. analyst Doug Gold, "Gateway read the writing on the wall. Proprietary networks and protocols are not what the market wants."

The company's G/Token-Ring network, developed by British-based Madge Networks, Inc., includes a 16-bit adapter for IBM Personal Computer ATs and compatibles as well as IBM Personal System/2 Model 30s.

Gateway will also offer an eight-bit adapter for IBM Personal Computers and compatibles. The G/Token-Ring also includes a four-port and eight-port Multistation Access Unit (MAU), which are hubs that interconnect workstations in a star-cluster logical ring topology.

The MAUs can be daisy-chained together to expand the network. Workstations can be located up to 150 ft from the MAUs, and the total

See page 18

LANMARKS

ERIC KILLORIN

DECworld promises a treasure chest of surprises

Those eagerly awaiting the televised opening of the Titanic's vault later this month may find the treasures on the QE2 this week in Boston a fitting preview.

This week and next, the ship of ships in Boston Harbor is the scene for DECworld — their product showcase of the year, and perhaps the decade. DECworld promises to entertain the anticipated 50,000 attendees with the biggest customer extravaganza in the company's history.

And it's all aimed at nurturing the continued loyalty of DEC customers in the face of competitive new offerings from IBM.

Among the expected product introductions — not the least of which are new MicroVAX IIIs based on a rumored CVAX chip set — will be products designed to increase DEC's stronghold in local networks. The CVAX is a new, higher performance proprietary chip set that DEC is said to be developing based on CMOS technology.

A new SNA gateway is likely to replace the aging PDP-11-based gateway, thus enabling DEC network users to reach out and touch their IBM hosts with greater ease and speed. Also expected are announcements concerning network management and reams of software that give more credence to the slogan "Digital Has It Now." It's likely that most of these products will be available as soon as buyers' accounts payable departments can muster the funds.

What is perhaps more telling than the products themselves is the message DEC is trying to convey. DEC has been able to capture the minds and pocketbooks of corporate America using the slogan of company President Ken Olsen: "One operating system, one solution." Said another way, "The network *is* the system."

If local networks are the thread that weaves computing into the very fabric of corporate profitability, then DEC's laurels are well earned. Rather than achieve integration in piecemeal fashion, as so many of its competitors have done, DEC has been able to achieve this seamless path of connectivity from the outset, albeit slowly and with much criticism from pundits during the company's earlier networking efforts.

Save for the success of the VAX/VMS family in the late 1970s and early 1980s, DEC did not receive much industry praise

See page 18

Killorin is the publisher of "Netline," an industry newsletter on computer networks, a publication of Hyatt Research Corp. in Andover, Mass.

NETWORK OPERATING SYSTEMS

3Com upgrades its 3+ software

BY PAULA MUSICH
Senior Editor

SANTA CLARA, Calif. — Personal computer network maker 3Com Corp. last week announced an upgrade of its 3+ network operating system that supports IBM's Personal System/2 microcomputers as network workstations and servers.

The 3+ Version 1.2.1 operates with the Personal System/2 Model 30 as well as the IBM Micro Channel-based models 50, 60 and 80. The software is compatible with IBM's Token-Ring Network adapters for the Micro Channel bus as well as with applications written to DOS 3.3 and Network Basic I/O System.

Currently, IBM's Micro Channel Token-Ring adapter is the only network interface available that will operate with the new version of 3+. 3Com has announced its intentions to provide an Ethernet adapter for the Micro Channel bus but has not said when it will be available.

3Com achieved compatibility in the upgrade by removing copy protection from 3+ and adding software drivers to support the Micro Channel architecture. 3Com said it did not have to modify 3+ software code to support the Micro Channel because of its adherence to DOS 3.3 and Microsoft Corp.'s Redirector standards.

"We had to remove our copy protection in order to get the software on a 3½-in. disk," said Robert Bressler, vice-president and general manager of 3Com's software products division. "The copy protection scheme looked for particular tracks on a disk, which are different between the two media." Bressler said 3Com research showed that 80% to 90% of users will not copy software, and there is no foolproof scheme to thwart the users that do.

3Com also added enhancements to the new 3+ version that are intended to make 3+ NETBIOS features more functional for third-party developers.

Version 1.2.1 is priced at $1,050 per server. Current 3+ customers can buy the 3+ upgrade to Version 1.2.1 for $30. Each package is available in a 3½-in. diskette format for the Personal System/2 and 5¼-in. diskettes for IBM Personal Computers.

DECworld surprises

continued from page 17

during that period. But slowly the team responsible for DECnet made its success known, and the company earned the label "sleeping giant of the industry."

This is not to say that DECnet was or is immune to criticism. The overhead associated with implementing DECnet in a departmental fashion is costly. Some of the hardware options in the DECnet product family are obsolete. And many third-party DEC products offer higher performance local network options and more bang for the buck.

Nonetheless, the DECworld event, and the networking product family that will play a key role there, signals DEC's all-out push to undermine the idea that only IBM offers investment protection for large users. IBM is fighting furiously for the middle tier, and its 9370 is no sure recipe for success. DEC, too, is at a crossroads, for it desperately needs new accounts to support the momentum of its growth.

Many users are poised to make their first substantial local networking acquisition. Unlike the traditional processor or software selection process that paid little attention to communications, the choice for virtually every piece of computing equipment today is being examined with connectivity in mind. As a result, DEC is at the forefront of users' lists of preferred vendors.

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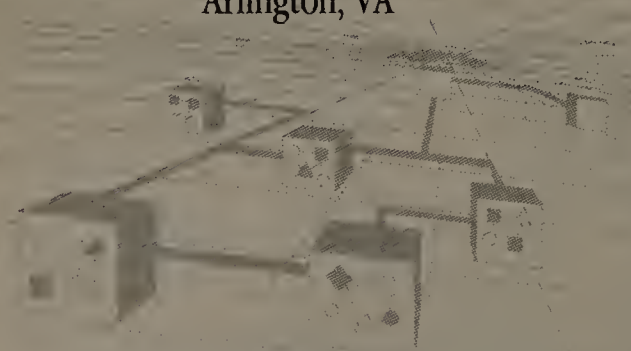

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Gateway adds net

continued from page 17

distance supported end-to-end in the network is 400 ft. The network operates over IBM Type 3 nonshielded twisted pair and Type 6 shielded twisted-pair wiring.

The Gateway token-ring network supports Novell's NetWare network operating system and supports Microsoft Corp.'s MS-Nets software, IBM's PC LAN Program and Network Basic I/O System-based networking software.

The G/Token-Ring adapter cards are interoperable with IBM Token-Ring adapters. The eight-bit adapter is priced at $650, and a price has not yet been established for the 16-bit adapter. The four-port MAU is priced at $370 and the eight-port MAU is $610. The network will be available Nov. 1.

Users say 3Com has edge

continued from page 17

Performance was a key issue because the Northeast region's first token-ring network was slated to be installed in the computer systems building in which all applications development is done, Schmieder said.

Schmieder evaluated IBM's and 3Com's token-ring adapters approximately nine months ago, at which time only IBM's low-end Token-Ring Network PC Adapter was available. 3Com also had only one adapter at the time, its high-end TokenLink Plus.

Although more expensive than IBM's adapter, Schmieder said he prefers 3Com's adapter because it has two processors and more memory than the IBM product.

Currently, IBM sells three adapters, ranging in price from $695 to $895. 3Com has two adapters: the TokenLink, priced at $650, and the TokenLink Plus, priced at $895. IBM's top-of-the-line adapter comes with a 16K-byte buffer, while 3Com's high-end adapter has 256K bytes of memory.

Schmieder also tested network software from IBM, 3Com and Novell, Inc. 3Com's network software got the thumbs-up over IBM's and Novell's network operating systems.

"IBM's LAN package had some serious drawbacks," Schmieder said, citing poor security and no support for remote nodes.

3Com comes out ahead

Initially, Schmieder planned to use Novell's NetWare because it is widely installed. However, he said his testing revealed that 3Com's software supported faster communications between servers. In addition, 3Com supported speeds up to 19.2K bit/sec for dial-up communications to the network.

"3Com came out ahead of Novell for tying networks together," Schmieder said. Once chosen, 3Com products became the company's networking standard. Currently, Waste Management has approximately 35 Personal Computers networked with one 3Com 3Server.

The company expects to have up to 70 microcomputers networked by December, and Schmieder has put off buying another server until 3Com introduces an Intel Corp. 80386 microprocessor-based model. Schmieder said he expects 3Com to have such a server by the end of the year.

Waste Management's network is spread across a complex of six buildings. The computer systems building is wired with IBM Type 1 shielded twisted-pair wiring, and the other five buildings are cabled with IBM Type 3 nonshielded twisted-pair wiring.

The systems group at the Southfield office provides computer support for four districts, and ultimately, these district offices will be tied to the regional office network, Schmieder said. Each district, in turn, will have its own 3Com token-ring network with up to 15 nodes each.

For Tory, Tory, DesLauriers & Binnington, token ring was the obvious choice over Ethernet technology, according to Charles F. Scott, a partner in the firm and chairman of its technology committee. "Toronto is a hotbed for token ring," Scott said, noting that local consultants have more experience installing large token-ring networks than Ethernet networks.

Because of the company's heavy volume of document processing, performance was an important issue as the firm moved from dedicated word processors to networked personal computers, Scott said. The firm currently has 150 nodes on the network, which spreads across five floors and uses the IBM Type 3 cabling system. Half a dozen 3Com servers are located in one room, and several IBM Personal Computer ATs act as print servers.

The firm's network has a mix of IBM and 3Com network adapters, but the IBM cards are being phased out, Scott said. The firm is moving to 3Com's TokenLink Plus adapter because of its larger memory. Although the memory is of little use right now, 3Com plans to provide users with the capability to run much of its networking software on the network adapter, Scott said. This will lead to even greater performance improvements, Scott said.

3Com's McNiel acknowledged that 3Com is "going to be providing the potential to download a substantial part of our 3+ code onto the adapter card." This capability is likely to be available in the fourth quarter, she said, adding that some users have already purchased the adapter in anticipation of this capability.

COMMUNICATIONS MANAGER

The Southwest pays best

Telecommunications professionals in the Southwest reported the highest average salaries in a survey conducted by the industry newsletter "Telephone Angles" that drew 575 respondents. The average salary for telecommunications professionals in the Southwest was $44,706; in the Northeast, $39,225; in the West, $37,931; in the South, $36,389; and in the Midwest, $35,331.

CORPORATE INFORMATION MANAGEMENT

Central management serves Avon strategy

Group serves data, office and communications needs.

BY MICHAEL FAHEY
Senior Writer

NEW YORK — In order to meet the needs of an increasingly diversified organization, Avon Products, Inc. has established a corporate Management Information Services department to coordinate its entire information systems and communications operations.

"The department's goal is to use information technology to help the bottom line," said Rainer Paul, vice-president of Management Information Services. "The key is to integrate that technology into our business strategy."

To achieve that goal, the department has been assigned four primary functions, Paul said. One is to provide office automation and information systems consulting services to the Avon divisions. The second is performed by the corporate telecommunications department. That department, which is part of the corporate Management Information Services department, is coordinating the installation of a new corporatewide telecommunications network.

The third function is to support the information systems and communications operations that serve Avon's corporate users. In addition to supporting the corporate staff's information services and communications needs in an operational sense, the group will be called upon to provide strategic business information for the corporation.

"We are creating an executive information system to track our own businesses and to look at the competition," Paul said. "We will bring together all of the key information from the corporation and look at it so we have a better understanding of our resources.

"In the health care arena, we could look at our nursing home occupancy rate and compare the kinds of new business we have been able to attract vs. our existing business," Paul said. "Every company has nonfinancial business indicators that are important to track."

Avon's recent diversification was a major impetus for the formation of a Management Information Service department, Paul said. "Originally, Avon was in the cosmetics business, but now it is also in the health care business," he said. "As Avon grew and diversified, people within the company realized that the corporate information services function had to expand."

Rainer Paul

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GUIDELINES

CHARLES KAHN

The manager as problem solver

A manager's job can be viewed as a series of problems requiring solutions. Simply put, managers are paid to confront problems and solve them as quickly as possible.

The manager who understands this and approaches problem solving in a systematic manner will be less prone to procrastination and more likely to view decision making as a challenging necessity of the job.

The first step in the process is identifying the problem and its implications by talking with everyone concerned with the issue. Once the facts have been gathered and the implications have been determined, the information must be carefully analyzed.

At this point, it is helpful to list all of the possible courses of action. This requires an examination of all facets of the problem to determine the one solution that will best address all of them. Taking no action can also be a genuine alternative.

Managers should realize that nearly every possible solution will offer some risks, and they should not focus on eliminating risk. Seeking to avoid risk completely can have the same result as procrastination: It can paralyze the organization. The idea is not to eliminate risks but to take the right ones. A bettor would call it playing the percentages.

> Seeking to avoid risk completely can have the same result as procrastination: It can paralyze the organization.

Recognizing that problem solving and decision making are both rational processes that can be guided by the steps outlined above will help the manager avoid some common pitfalls.

One, which is an outgrowth of a desire to avoid risk, is to become overly concerned about possible executive opposition to a solution. For example, constantly asking, "'Will they buy this?"

Another common pitfall is to avoid analyzing the problem and to arrive at a decision based on a hunch. All too often, when a manager unveils a decision by saying, "I've got a funny feeling," the supposedly intuitive decision is motivated by a desire to avoid careful consideration of the problem and its possible solutions.

After carefully gathering and analyzing information and weighing the alternative solutions based on experience and company policy, managers should run through a short checklist. Is the solution a relevant one that will address the most significant aspect of the problem? Is it practical? What looks good in theory may be too expensive or too difficult to implement.

Treating problem solving and decision making as integral parts of the manager's job that can be approached systematically prevents each problem from turning into a crisis.

Kahn is an Orlando, Fla.-based communications and management training consultant.

ASSOCIATIONS

Despite earliers reports to the contrary, the **Tele-Communications Association (TCA)** is still considering joining the Corporation for Open Systems (COS) as an affiliate member, according to TCA President Lionel Gillerman. A TCA official who told *Network World* the organization had dropped plans to join COS did not speak for the organization, Gillerman said. "We are still considering joining, and the matter will be examined by several committees," Gillerman said.

The Southeastern Telecommunications Association (SETA) has hired Carlisle Reames to serve as its first full-time director. Reames, who was appointed to the position of executive vice-president of SETA, recently retired from Bankers Trust of South Carolina, where he spent 18 of his 19 years with the company in the telecommunications department.

SETA was prompted to appoint a full-time director because its members, who are telecommunications professionals, are able to devote increasingly less time to SETA activities, according to Mel Dunn, the group's voluntary director of public relations. "Our members cannot spend as much time as they used to on SETA activities," said

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DIALOGUE

Have recent tax law changes — specifically the Tax Reform Act of 1986, which eliminated the 10% income tax credit for capital equipment purchases — affected your policy on buying vs. leasing communications equipment?

"Not at all. The tax law hasn't affected us in the least. Right now, we both lease and buy, depending on the location. Typically, we look at the different rates and try to project how long we'll be in that particular location and what the possibility of having to expand is, and we make the decision to lease or buy on that. The nature of the [restaurant] business doesn't tie us to either leasing or buying, so the law didn't change a lot for us.

C. Gerry Vargo
Director
Information services department
Little Caesar Enterprises, Inc.
Farmington Hills, Mich.

"Yes, the tax law change has affected us. Because of it, we are leasing more. The decision to lease more was handed down by the people on the financial side as a result of the tax reform. Without the investment tax credit, buying is less attractive, but I really couldn't say what we'll be doing in the future because that decision is financial. For the last six months, however, leasing has been given consideration over buying here.

Connie Schack
Communications manager
Pershing and Co.
New York

"No, there's been no effect because the change wasn't applicable to us. We haven't bought equipment for investment tax credit but because we required some equipment or technology that had a short life expectancy — maybe two or three years — and we found that pushed lease rates too high.

We never made the decision to lease or buy on the basis of an investment tax credit. Generally though, we lease our equipment.

Sid Smith
Manager of telecommunications
Crowley Maritime Co.
San Francisco

"We're leasing more now and [the tax law change] is certainly a part of the reason. Our capital is a little tighter than it has been in the past, so leasing makes more sense. But leasing more hasn't really had any effect on our service.

Edward Walsh
Telecommunications director
Southern California Rapid Transit
Los Angeles

"The changes make it more attractive to lease or, actually, less attractive to buy. We tended to lease a lot anyway, primarily due to the fact that we wanted to keep our asset base as low as possible.

Chris Davis
Director of telecommunications
Rexnord Co.
Milwaukee

Avon strategy

continued from page 19

In the past three years, Avon acquired The Mediplex Group, Inc. and Foster Medical Corp., both suppliers of health care products and health care services.

In addition, Avon acquired Retirement Inns of America, Inc., a California-based company that builds and runs retirement communities.

The idea for the corporate information services department, which was formed in January 1987, was first proposed to Avon's upper management by Paul, a 16-year Avon veteran who previously served as vice-president of MIS at the company's beauty products division. He was asked to head the new department after he outlined for management the potential benefits of creating a centralized management function.

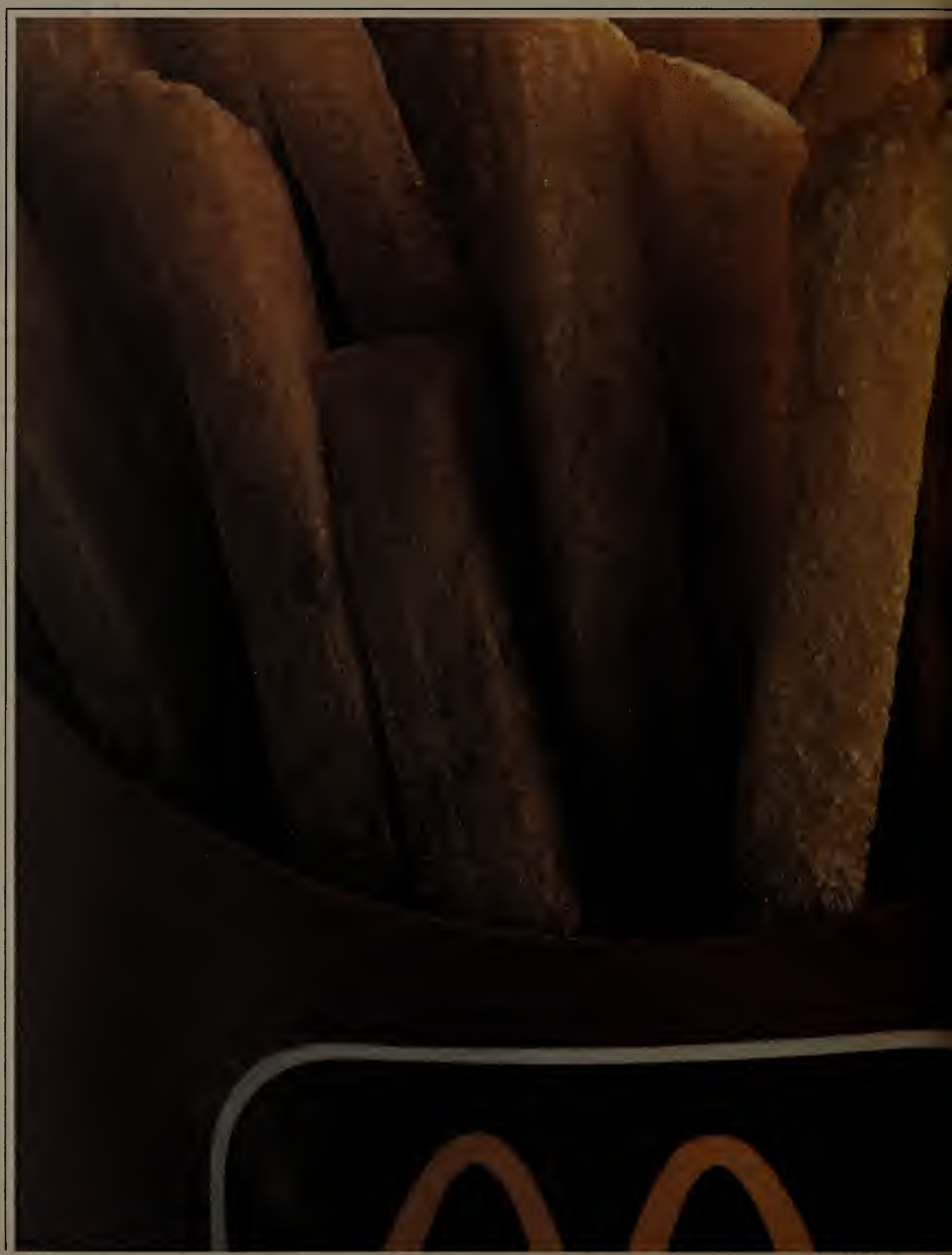
Each of Avon's divisions has its own information systems and communications staffs that handle day-to-day operations, Paul said. Representatives from each division and from the corporate management information services staff meet every two months to chart corporate information systems and communications strategies.

As a result of these meetings, Avon has adopted a preferred vendor list to take advantage of volume discounts from suppliers. Decisions are made by consensus as often as possible, according to Paul, who reports to Avon's chief financial officer. But, "there comes a time when a decision has to be made; and in those cases, we make the decision for the company," he added.

"The divisions run their own day-to-day operations," Paul said. "The functions that cut across the entire corporation are the responsibility of the corporate MIS department."

For that reason, he said, the corporate telecommunications department, headed by Michael Serozi, will coordinate the implementation of a new backbone T-1 network that is set to go into operation next year.

According to Serozi, the telecom-



munications network serving the Avon Beauty Division was in need of an overhaul. In addition, the newly acquired companies were just beginning to formulate sophisticated communications strategies. This presented an opportunity for implementing a corporatewide networking strategy, according to Serozi, who joined Avon two years ago after leaving Xerox Corp.

"The idea is to develop a corporatewide communications strategy and architecture," Serozi said. "We do not want to have five companies with networks traversing the country.

"We have organized a telecommunications management council within the corporation," he continued. "We are the organizers and promoters of teamwork throughout the organization."

Serozi said his staff meets with the information systems, communications and business planners from the Avon divisions to discuss the technical and strategic business needs of the divisions as well as how they fit into the corporation's overall telecommunications strategy.

"We are looking at building a six-node T-1 network," Serozi said. "Currently, it looks like we will have nodes in Los Angeles, Chicago, Cincinnati, Atlanta, New York and Newark, Del. But we are still negotiating. We do not want to dictate policy." Serozi said Avon has not determined how it will assess network costs to its divisions.

Associations From page 19

Dunn, who is director of corporate telecommunications at Genesco, Inc. in Nashville. "Their duties have expanded, and in many cases, their staffs have decreased."

Reames, one of the founders of SETA, was one of 20 applicants for the newly created full-time post, Dunn said. "We were very fortunate to get someone with his experience in telecommunications and with our organization," Dunn said. SETA has 500 member companies and represents telecommunications professionals in Virginia, Florida, Georgia, Alabama, Mississippi, Tennessee, North Carolina and South Carolina.

During its annual meeting on Sept. 17 the **Tennessee Telecommunications Users Association (TTUA)** will elect officers for the coming year. In addition, the group will announce the name of the Tennessee telecommunications user of the year as voted by the TTUA membership.

Representatives from US Sprint Communications Co. will conduct a presentation of Sprint plans to construct a fiber-optic telecommunications network throughout the state of Tennessee.

The meeting will be held at the Doubletree Hotel in Nashville.

An **Aspen Users Group** has been formed in the San Francisco Bay area for users of Octel Communications Corp.'s voice-messaging system. The initial meeting was sponsored by Syntex Corp., and the group voted to continue meeting on a quarterly basis. Future users group meetings will be held in Los Angeles and Philadelphia, according to Julie Kosnik of Octel Communications. Kosnik said her company is interested in helping form additional users groups. She can be reached at (408) 942-6596.

The Bell operating companies' plans for rolling out Integrated Services Digital Networks are a major concern for the **National Centrex Users Group,** according to the organization's president, Dick Jenifer. The group's annual meeting, hosted by Domino's Pizza, will be held Nov. 3 to 5 in Ann Arbor, Mich., at the Ann Arbor Marriott. The carriers have promised to provide ISDN for Centrex users by 1988, but have not stipulated what services will be available to users as a result of the rollout, Jenifer said. "We are anxious to learn what the implementation of ISDN will mean for us, and so is all of our upper management," Jenifer said. "They have been reading about it in *Fortune* and other places and they are asking us exactly what is going on."

Of particular concern to Centrex users is how ISDN services will differ from the services that are becoming available as the local exchange carriers upgrade their central offices to provide digital switching operations.

In addition, Jenifer said, AT&T's decision to stop making 1A2 key systems is a matter of concern to the Centrex users. "Those have been phased out and users are trying to decide what systems to use instead."

The Oct. 7 meeting of **Professionals in Telecommunications**, to be held at the Holiday Inn in Foster City, Calif., will include presentations by Jim Koerlin, Dean of Telecommunications at Golden Gate Univerity, and Eric Frank of Executive Direction, a professional recruitment firm.

Koerlin will discuss the degree programs offered by GGU and the advantages of having such a degree when seeking a career in the field. Frank will provide his perspective on companies looking for telecommunications personnel and will offer tips for job hunters.

What ISDN is doing for McDonald's data networking capabilities is no small potatoes.

When McDonald's Corporation took a hard look at its telecommunications needs a few years ago, it saw 9400 restaurants in 46 countries, served by more than 20 networks. And a new restaurant opening every 17 hours.

McDonald's needed a telecommunications system that could grow with it, but one simple enough that the company could concentrate less on telecommunications and more on talking to customers.

The solution: the nation's first customer application of ISDN, the Integrated Services Digital Network, made possible by the cooperation of Ameritech's Illinois Bell and AT&T Network Systems.

McDonald's will use ISDN to send voice, data and video over ordinary telephone lines simultaneously. An AT&T 5ESS™ switch at Illinois Bell will support digital phones, integrated voice/data terminals, facsimile, voice mail, host access and modem pooling, giving McDonald's a real competitive advantage in its data networking capabilities.

"In business language, this means we're going to do an even better job for the 30 million customers that we serve every day," said Bonnie Kos, McDonald's Vice President of Facilities and Systems.

"ISDN provides an information outlet to every workstation, thereby eliminating time-consuming and costly wiring, as well as enhancing messaging and network control capability."

Thanks to ISDN, McDonald's will enjoy better customer service, more current market information, better tracking of product promotions, more efficient inventory control, and reduced administrative workloads.

Ultimately, higher level applications of ISDN on the public switched network will replace most of the company's myriad networks, linking all its offices and restaurants around the world.

As we are doing for McDonald's, AT&T and your telephone company can help your business realize the networking efficiencies and cost savings of ISDN. To find out all that ISDN can do for you, write on your business letterhead to: AT&T Network Systems, P.O. Box 1278, Room 2973, Morristown, N.J. 07960-1278.

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TELECOMMUNICATIONS RESEAUX & INFORMATIQUE
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Resocom is being produced by Capric Organization, producer of several European shows including PC Forum, in conjunction with two IDG Communications' publications in France: *Telecoms International* and *Le Monde Informatique*. Serving as show coordinators in the United States is IDG Conference Management Group, an International Data Group Company.

NEW PRODUCTS AND SERVICES

See inside for:
- ▶New Blast II software
- ▶Rack-mountable Datapath
- ▶RM-Series modem expansion

▶ACCOUNTING APPLICATIONS

PC-to-CPU software debuts

PC-processed transactions linked to mainframe programs.

BY MARY LINEHAN
Staff Writer

CHICAGO — McCormack & Dodge Corp. recently announced the Satellite Series, two software products that enable users to process accounts payable and general ledger transactions on personal computers and later merge that data into mainframe applications.

The AP:Satellite and GL:Satellite programs, introduced at the vendor's 10th annual user conference here, work in conjunction with McCormack & Dodge's mainframe products to off-load accounting tasks from the mainframe, saving communications costs as well as simplifying mainframe access from remote sites.

The new software products work with Interactive PC Link, the firm's micro-to-mainframe link that transfers information between the two environments.

Accounts payable and general ledger mainframe data is downloaded to personal computers with the PC Link and, once transactions have been processed on the personal computer, PC Link uploads them for mainframe consolidation.

AP:Satellite, the accounts payable package, allows end users to enter and validate invoice transactions. It incorporates several mainframe functions, including the ability to inquire into invoice and vendor activity and to print vendor, invoice, tax and general ledger reports.

The more comprehensive of the two new products, AP:Satellite, also has check-writing capabilities with real-time check generation to meet immediate needs.

GL:Satellite, the general ledger program, enables users to enter and edit ledger transactions on the personal computer to be uploaded to the mainframe. Invalid account entries can be flagged and printed out in a control report to facilitate error correction, according to the vendor.

Both programs have security features on the mainframe and the personal computer to ensure data integrity. On-line help documentation is included.

Mainframe applications run on the IBM 30XX and 43XX machines under OS and DOS.

Pricing

Both AP:Satellite and GL:Satellite will be available in October. AP:Satellite costs $17,500, and GL:Satellite lists for $12,500. Volume discounts are available for additional personal computer usage.

McCormack & Dodge is located at 1225 Worcester Road, Natick, Mass. 01760, or call (617) 655-8200.

▶TERMINAL EMULATION

CXI 3270 board for PS/2 bows

BY JOSH GONZE
Staff Writer

NEW YORK — CXI, Inc. announced a 3270 terminal-emulation board for IBM's Personal System/2 at PC Expo here last week.

The Pcox/Coax-P lets Personal System/2s emulate IBM 3278 and 3279 terminals. It can be installed individually or shared in a network environment by installing the board in a workstation supporting Novell, Inc.'s NetWare network operating system. CXI is a subsidiary of Novell.

The board supports IBM software designed for IBM's own terminal emulator, the 3278/9 Advanced Emulator Adaptor, providing users the option of running either package. CXI's previous version, designed for use with IBM's Personal Computer, is restricted to running Pcox, CXI's proprietary micro-to-mainframe communications software. Using the Pcox card and the proper software, a connection to a cluster controller is set up via coaxial cable. Capabilities include single- and multiple-host sessions, access to mainframe color-graphics software and emulation of mainframe printers by Personal Computer printers.

The board will be available in October for $545. The company can be reached at 1157 San Antonio Road, Mountain View, Calif. 94043, or call (415) 969-1999.

▶PERSONAL COMPUTER SOFTWARE

PCDA turns PC into data analyzer

BY MARY LINEHAN
Staff Writer

FT. LAUDERDALE, Fla. — Triple C Software, Inc. recently introduced PCDA, a software program that enables IBM Personal Computers and compatibles outfitted with a serial communications port to operate as a serial data analyzer without any additional printed circuit boards.

The PCDA permits a personal computer to capture and display serial communications between two devices, displaying each byte transmitted — as well as associated error codes and control-line status — as either extended ASCII or in HEX binary code on the personal computer's monitor.

The user interface of PCDA is menu-driven and uses English language commands. The program can also store the communications parameters in a separate user-defined disk file. If the same personal computer is used to troubleshoot different serial systems, more than one communications parameter file can be kept.

When the PCDA is operating on two serial ports, data from each device can be displayed on the monitor, either in different intensities or split-screen mode.

PCDA stores data in a 64K-byte circular buffer. Error states, such as parity or overrun, and status lines can be monitored and are saved in memory along with each byte of data. Once gathered, Triple C's Browse mode can be used to examine the data, including the status line and error states that were present when the byte was received. At any time, the entire buffer can be saved to disk and later reloaded into the buffer for examination.

The system is available immediately at a price of $95, plus $5 shipping and handling. Triple C Software, Inc. is located at 800 West Oakland Park Blvd., Suite 217, Ft. Lauderdale, Fla. 33311, or call (305) 564-8011.

▶SWITCH SAFEGUARD

Equinox security tool provides call-back

MIAMI — Equinox Systems, Inc. recently announced call-back security software for its line of data switches.

The Equinox Dialback Security Controller is designed to prevent unauthorized switch access over dial-up lines. The device checks the names and passwords of callers against a master list, terminates the call and dials the user back at a predetermined telephone number.

The software runs on a user-supplied IBM Personal Computer or compatible with a minimum of 256K bytes of memory.

Security features

The software allows system administrators to set up time of day access control, limiting the authorized access of individual users to specified time periods, typically normal working hours.

Reports on logons and attempted logons, including such records as incorrectly entered names and passwords, unanswered call-backs and access attempts outside authorized time of day are also kept for audit purposes. The package provides other types of reports based on the logon reports, such as total security violations and total number of logons. Users can create customized reports based on the logon records. Equinox said a personal computer equipped with a hard disk can handle a virtually unlimited number of stored telephone numbers, while a personal computer with two floppy disks can handle roughly 1,500 numbers.

Pricing

The Equinox Dialback Security Controller is priced at $95.

Equinox Systems is located at 14260 S.W. 119 Ave., Miami, Fla. 33186, or call (305) 255-3500.

First Look

NTI tool kit eases Apple programming for SL-1

Northern Telecom, Inc. recently introduced a software development tool kit that facilitates the development of Apple Computer, Inc. Macintosh programs for use with Northern Telecom's Meridian SL-1 private branch exchanges.

The tool kit includes a set of diskettes that simulate Meridian SL-1 dialing functions, such as call setup, timing and prompts usually received from the SL-1's data modules and line cards. Programmers developing Macintosh software can use the tool kit to imitate call establishment without an SL-1.

The SL-1 can be used to let the Macintosh access public data bases, other computers, AppleTalk networks and shared network resources.

The dialing responses the tool kit simulates are from the following SL-1 data modules and line cards: Asynchronous Data Option, Asynchronous/Synchronous Interface Module, Add-On Data Module, Asynchronous Interface Line Card and RS-232 Interface Line Card.

The tool kit runs on a Hewlett-Packard Co. Model 4950 protocol analyzer, which can be leased from a computer lending company.

The software development tool kit is currently available at a price of $99.

Northern Telecom, Inc., Open World Marketing M.S. 230, 2305 Mission College Blvd., Santa Clara, Calif. 95054, or call (408) 988-5550.

IDEAssociates introduces terminal-emulation products

IDEAssociates, Inc. recently introduced two new terminal emulation products that enable multiple personal computers at remote offices to access IBM System/34, System/36 and System/38 computers as IBM 5250 terminals.

The **IDEAcomm 5250/Remote Gateway** is designed for offices that have IBM Network Basic I/O System-compatible local networks, and the **IDEAcomm 5250/Remote Share** is suited for offices with multiple stand-alone personal computers, according to the vendor.

Both products are designed to reduce the cost of communications facilities needed to access remote System/34, System/36 and System/38 processors, as well as obviate the need for remote cluster controllers and individual emulation boards.

The Remote Gateway connects remote personal computers on IBM Token-Ring or other NETBIOS-compatible local networks with System/34, System/36 or System/38 computers, enabling personal computers to access the processors' resources, as well as those on the personal computer and local network, concurrently.

Remote Share allows four remote personal computers to access System/34, System/36 and System/38 minicomputers via one emulation board installed in a personal computer configured as a server and software installed in each individual user computer.

Suggested retail price for the complete IDEAcomm 5250/Remote Gateway package, including an IDEAcomm 5250/Remote board and gateway software, is $1,775. Customers who have an IDEAcomm 5250/Remote card can purchase IDEAcomm 5250/Remote Gateway software for $995.

The IDEAcomm 5250/Remote Share package, including an IDEAcomm 5250/Remote emulation card, software, cables and two serial ports on the IDEAmini card, sells for the suggested retail price of $1,395. Customers who have the Remote card can purchase the Remote Share software for the suggested retail price of $495.

IDEAssociates, Inc., 29 Dunham Road, Billerica, Mass. 01821, or call (617) 663-6878.

New Blast II software introduced

Communications Research Group recently announced an upgraded version of its **Blast II** VAX-to-personal computer communications software that allows MicroVAXes and VAXes to dial out and poll personal computers automatically.

The new Blast II software allows users to create VAX script files, which are special programs that allow customized and automatic initiation of VAX access to personal computers. The automatic access could be used to poll for retrieval of selected files, distribute data to remote sites, invoke data processing or transfer data between applications.

The upgrade also allows additional automated dialing sequences with a preprogrammed connection routine from a single keystroke. The software presents a user interface similar to that of Lotus Development Corp.'s 1-2-3 spreadsheet.

Pricing

For current Blast users, prices for the upgrade are set at $250, $325 and $400 for the MicroVAX, VAX 11-000 and VAX 8000 versions, respectively. For new users, the new Blast version is priced at $695, $995 and $1,295, respectively, for the same three VAXes.

Communications Research Group, 5615 Corporate Blvd., Baton Rouge, La. 70808, or call (504) 923-0888.

Racal-Milgo modems meet CCITT V.33 specifications

Racal-Milgo, Inc. recently announced the expansion of its RM-Series modem family with the **RM-1433,** a synchronous leased-line modem that meets mandatory and optional requirements of the CCITT V.33 specification.

According to the vendor, the RM-1433 can be used with most older type 3002 voice-grade private lines, newer 5, 6, 7 or 8 service types with D conditioning or CCITT M1020 lines.

Modem speed, port configuration, transmit level and other RM-1433 configuration information is displayed and selected from a touch-sensitive front panel. Additional standard features include built-in local and remote tests for fault isolation and nonvolatile memory for protection of stored configuration and strap settings in the event of a power outage.

An Eye Pattern Generator provides a visual display of important internal operating characteristics without interrupting or degrading data transmission.

Options for the modem include Multiport, which allows terminals to share the modem and minimizes the number of phone lines needed in a network; Racal-Milgo's Integral Async Support, which allows asynchronous equipment to operate over the modem's synchronous capabilities; and an Integral Encryption option based on the Data Encryption Standard.

The RM-1433 is available at a single-unit price of $3,150, with options priced separately and quantity discounts available.

Racal-Milgo, Inc., 1601 N. Harrisons Pkwy., Sunrise, Fla. 33323, or call (305) 475-1601.

Crystal Point's PC-TERM supports NETBIOS networks

Crystal Point, Inc. recently announced that Version 3.2 of its **PC-TERM** communications program now supports Network Basic I/O System-compatible networks, multiple sessions and background operation.

A general purpose communications program for networked and stand-alone IBM Personal Computers and compatibles, PC-TERM features a macro language that can be used to program complex operations into one key stroke to create custom menu and turnkey systems and to perform unattended operations. Basic operation, without macros, is menu-driven.

Background operation of PC-TERM allows file transfers, macro execution and remote system operations to take place while the personal computer is being used for other tasks. A user can start a file transfer on a remote computer, put PC-TERM in the background and continue with other work while the transfer continues.

Other enhancements to the PC-TERM Version 3.2 include: addition of Digital Equipment Corp. VT220 and Tandem Computers, Inc. terminal emulations, automatic international character translation and remote-access security flag.

PC-TERM is distributed on 3½-in. and 5¼-in. disks for installation on stand-alone personal computers or networked systems. Pricing for a stand-alone PC-TERM is $249, and pricing for a network PC-TERM with 32 users is $1,600. Pricing for larger networks and information on site licenses are available on request.

Crystal Point, Inc., 12221 N.E. 140th, Kirkland, Wash. 98034, or call (206) 821-1909.

Network Software debuts AdaptSNA LU0 software

Network Software Associates, Inc. recently released program-to-program communications software for IBM Personal System/2s, Personal Computers and compatibles in Systems Network Architecture/Synchronous Data Link Control environments.

The new software, called **AdaptSNA LU0,** offers an application-independent implementation of the IBM Logical Unit Type 0 protocol for PC-DOS applications. Using the package, those applications can be modified to communicate under LU 0, the company reported.

The package provides two levels of LU 0 verbs, an application subsystem and an interactive implementation tool kit. The basic verbs control the LU 0 protocol. The implementation tool kit assists users in creating their own LU 0 applications.

LU 0 is the LU classification for several customized, host-based SNA applications. IBM's Information Management System, Batch Control Program, Transaction Processing System and CICS application subsystem all use LU 0.

AdaptSNA LU 0 runs on all members of the IBM Personal System/2 and Personal Computer families and compatibles equipped with 256K bytes of memory and an SDLC card and running under PC-DOS 2.0 or later versions.

Network Software Associates, Inc., 22982 Mill Creek, Laguna Hills, Calif. 92653, or call (714) 768-4013.

Rack-mountable version of Datapath unit out

Northern Telecom, Inc. recently introduced a rack-mountable version of its **Datapath** terminal interface unit used to support switched digital services on Northern Telecom's Meridian SL-100 private branch exchange.

The data units convert terminal transmission protocols to Time Compression Multiplexing, the digital protocol used in Northern Telecom switches.

The rack-mountable Datapath is available in two models, a low-speed RS-232-C interface and a high-speed V.35 interface. The low-speed unit offers synchronous or asynchronous data transmission at speeds from 300 to 19.2K bit/sec. The high-speed unit offers synchronous data transmission only at speeds of 48K, 56K and 64K bit/sec.

The units are priced at $855. A rack-mountable shelf holding up to 16 data units is available for $1,600.

Northern Telecom, Inc., Open World Marketing M.S. 230, 2305 Mission College Blvd., Santa Clara, Calif. 95054, or call (408) 988-5550.

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Leader: Carl Malamud, principal, Computer and Communications Consulting

This seminar will present a clear overview of database management in the Digital environment, as well as other VAX-compatible systems. Topics include VAX architectures and DBMS software, Digital's database dictionary and query languages and distributed databases that use DEC products. You'll learn how to interface with non-DEC systems such as IBMs and PCs, and how to use independent DBMS software systems. **Who should attend:** Ideal for MIS managers and systems programmers involved in database applications or for anyone who'd like a basic understanding of the subject.

T-2 Designing Networks with Digital and other Vendor Architectures
Leader: Jim Herman, director, Telecommunications Consulting Group, BBN Communications Inc.

This seminar will take a practical look at how to design and upgrade modern, wide-area distibuted data networks. You'll learn how to assess specific requirements and choose the right architectures to design configurations that meet those needs. Discussion includes the evaluation of various VAX products as well as guidance on how to plan for change. **Who should attend:** An important resource for DP and data network managers, planners, analysts and others who evaluate, purchase or use communications networks.

T-3 Managing Mixed Vendor and Local Networks
Leader: Dr. Kenneth Thurber, president, Architecture Technology Corp.

This session will provide a thorough study of the issues involved in managing mixed vendor and local networks, stressing the function characteristics and capabilities of various designs and gateway technologies. Discussion includes LAN-based systems, Ethernet and token-ring gateways and LAN-to-LAN gateways. You'll learn how to evaluate and implement various technologies and products including those expected in the future. **Who should attend:** Especially useful for DP managers systems analysts, marketing managers and others who need to know how to manage mixed vendor local networks.

T-4 Comparing All-In-1 and other Office Automation Architectures
Leader: Amy Wohl, president, Wohl Associates

Examining the status of DEC's All-In-1 in today's office environment, this seminar discusses current applications, as well as those likely to evolve in the future. A comparison of All-In-1 with competing architectures, such as those offered by IBM, includes a look at how it fares in an ever-changing market. **Who should attend:** A good choice for professionals who currently use All-In-1 and for those who are considering new architectures for their communications network.

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Opinions

SYSTEMS INTEGRATION

JEFFREY M. KAPLAN

Proceed with caution

"Systems integration" is the buzzword of 1987. Every vendor claims to offer it, and all users wonder what they're getting. Is systems integration a service that's worthwhile to users? Is it a service that vendors are truly capable of providing? The answer to both questions is yes, if users are careful to select a qualified vendor.

Systems integrators are systems suppliers that assist users in achieving cost-effective interoperability and compatibility among different vendors' equipment and services. The role of communications in systems integration is fundamental. Systems integrators claim to tie together dissimilar devices into a coherent, cost-effective network.

Since the AT&T divestiture, the communications component of the systems integration process has gained greater attention from users. Freed of the shackles of the old Bell System, many users took advantage of their newfound freedom to build their own private communications facilities. The proliferation of new communications products and services and the advent of price competition enabled users to acquire communications equipment at a rapid rate.

During the past year, this rapid procurement cycle has given way to a user retrenchment, which is reflected in the slowing sales of many vendors. Users have decided to take time out to reassess their needs. They've learned that the lack of industry standards has created a nightmare of incompatible systems and costly duplication. Because communications is seen by many users less as an end in itself than as a utility for other system requirements, they're looking for ways to tie their communications facilities more closely to their data processing facilities.

Communications equipment and services vendors have caught on to this trend as their sales slow and margins tighten. They realize that many users will no longer accept simple black box solutions. Users are demanding greater functionality and interoperability. In response, vendors have offered systems integration services to generate new revenues.

A distinguishing feature of this form of systems integration is that the supplier assumes full responsibility for the project, even though portions may be performed by other vendors that act as subcontractors. This general contractor approach is much like that of the construction industry.

Communications vendors see systems integration as a way of establishing long-term relationships with users. By winning long-term contracts, vendors can lock in revenue flows over an extended period. And by offering users the added benefit of systems integration, these vendors hope to differentiate themselves from their competititors and, therefore, charge higher fees and increase profit margins.

Communications vendors are using a variety of strategies to penetrate the systems integration market. Some are using the "Trojan horse" technique, in which a major device (such as a private branch exchange or packet switch) is first rolled into the user environment before the vendor pitches a larger systems solution. Other vendors are broadening their product lines to offer customers greater capabilities. Still other vendors are repositioning themselves to meet a wider variety of user needs more effectively through strategic alliances.

Users must carefully assess their suppliers' true systems integration capabilities before they make any long-term commitments. They should remember that most communications vendors have evolved in an industry in which finger-pointing is the norm. It's hard enough to get vendors to own up to their own product or service deficiencies; expecting them to cooperate with other vendors may be unrealistic. Expecting a communications vendor playing the role of primary communications contractor to accept responsibility for equipment and services provided by other subcontractor vendors seems even more unrealistic.

Add to these concerns the fact that few communications vendors have a broad view of users' voice and data requirements, and it seems unlikely that many vendors will be able to meet users' systems integration needs fully. Users who are checking out systems integrators to solve their problems should be cautioned: Check each potential supplier's credentials carefully. What kind of experience does the vendor bring to the table? Does it have a successful track record locally? Does it have the necessary project management skills? Finally, does the supplier have the financial resources to see the project through? With many vendors, the answers may be no.

Kaplan is director of communications industry research for International Data Corp. in Framingham, Mass.

MANAGEMENT STRATEGIES

JAMES HERMAN

Diversify investments

Change is one of the few certainties in communications management, and network planning must take that into account.

Rapid technological progress threatens to render today's standard equipment obsolete in just a few years. In addition, the innovative application of information systems to business needs is changing network capacity and functionality requirements. As a result, major investment decisions on network upgrades are more difficult and risky.

With networks growing rapidly in scale, scope and complexity, choosing the wrong technology or vendor can have serious consequences. Yet, not choosing at all can also be risky.

The accelerating pace of change forces companies to keep updating their communications so as not to fall behind their competitors. Communications plays a key strategic role in a growing number of industries. Meanwhile, requirements keep increasing. Demand keeps rising. Managers who put off major changes may find that their networks are tightly tied to a dead-end technology or that the network is overly optimized to a single usage pattern or application.

A frequent reaction to decision making in the face of uncertainty is to try to reduce uncertainty by accurately predicting the future. Yet the very complexity of today's situation makes this the least successful coping strategy.

Another strategy is to grasp at leading edge technology in hopes that it will resist obsolescence longer than established technologies. Current interest in fiber-optic local-area networks, Integrated Services Digital Networks and hybrid switching exemplifies this. But investing in immature technologies leads to extra costs and frequent changes.

Another side effect of the difficulty of decision making is the tendency to stick with what you have. It's possible to become trapped by success and not keep pace with technology. Many companies still have their data processing systems organized around large, centralized mainframes running a mix of batch and on-line applications. However, new personal computer and minicomputer systems, coupled with flexible networking, allow distributed solutions that shouldn't be ignored.

The most common reaction is to stick with safe vendors. Blue chip systems dominate in corporations around the world. But while such choices minimize risk, as in the stock market, you rarely strike it rich by sticking with the blue chips.

A different strategy is diversification, which spreads risk and increases opportunities. In terms of communications technology, this means having an explicit policy of investing in several different kinds of systems, vendors and technologies. Some applications are supported by stable, mature technologies, while others may be good candidates for emerging approaches such as distributed processing or new protocols.

Technologies go through stages, as do people and businesses.

Herman writes, teaches and consults on network technology in Cambridge, Mass.

To think is to act; to write it down and send it to *Network World* is better. Send us a column for our opinions pages. Manuscripts must be letter quality, double-spaced and approximately 600 to 750 words in length. Disk and modem submissions are preferred. Columns should be timely, controversial, literate and accurate.

Contact Steve Moore, features editor, *Network World*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701, or call (617) 879-0700, ext. 732.

Opinions

▶ TELETOONS — By Phil Frank

After emerging from an embryonic period of research and development, new technologies enter a growth phase during which users begin to adopt them. Expert systems and network management systems are still in the embryonic phase, while T-1 networking is in the growth phase.

At some point, a technology evolves into a stable set of products produced by established vendors. This is the mature phase, in which product functionality levels off, prices decline and standards are adopted. Multidrop networks supporting point-of-sale and automated teller machine terminals are in this phase.

Finally, in the aging phase, use of the technology drops, usually due to replacement by other approaches, and maintenance and upgrades become difficult and costly. An example is terminal networks based on the IBM Binary Synchronous Communications protocol.

Proactive management requires investing in technologies at different stages in their life cycles. Investments should be split between growth technologies and mature ones. Gradually weed out products based on aging standards, while experimenting with embryonic technologies.

A rich stock of technology in-house makes for informed decisions. You'll have more options and better protection against unexpected changes. You can take an evolutionary approach to upgrading existing networks by buying more of the successful products and fewer of the aging or ineffective ones. Over time, the mix of technologies will change. Through differential purchasing, major transitions in technology can be effected in a few years, without any abrupt or discontinuous conversions.

To achieve this technology mix, however, you must have a network architecture that's open, layered and flexible. You must be capable of substituting new systems at one level without having to change the rest of the network. Above all, you must be using vendor-independent protocols and interface standards.

The key to a strong technology base is the richness of its diversity and the ability to integrate many technologies into an open architecture for future developments.

STANDARDS

JOHN L. BERG

Don't knock COS

A recent opinion column by Steve Zamierowski ("RFPs key to open systems," *NW*, July 13) appears to discourage user participation in the Corporation for Open Systems (COS). It also minimizes COS' critical importance to users by stressing the power of requests for proposal.

Following his advice would lead to billions of dollars in increased costs to users. Users would pay with severely constrained competitive flexibility and uncontrollable corporate information technology expenses.

It's a big mistake to suggest that working closely with a vendor encourages user-induced changes in a product. My experience indicates that the best way to get change from a vendor is to buy a competitor's product.

The column goes so far as to recommend that users remain outside COS and limit their role to selecting vendors that meet their needs. Essentially, this argument amounts to doing things the same old way that got users into the lamentable state we all share — a state in which users can't share data, programs or peripherals.

Supporting COS is users' best short-term strategy because it does three things that users cannot do themselves:

- It promotes the concept of internationally standardized interface points where small, medium and large vendors can couple their products to the products of other vendors.
- It develops tests that prove individual products will successfully connect at the standard interface points with all other similarly tested products.
- It advocates centralized certification and listing of products that pass intervendor interface tests.

Users have had neither the inclination nor resources to participate in national and international standards bodies.

Instead, they've standardized by selecting from among the products vendors have made available.

But vendors have been increasingly adept at holding their customer bases captive by holding users' data, programs and equipment investments hostage to a proprietary environment.

Manufacturing Automation Protocol, Technical and Office Protocol, and Federal Information Processing Standards are efforts by large users to make multivendor options available through standardization. Their experience indicates the need for broader and more concerted user support of open systems.

In short, users and COS must cultivate a market for open systems that attracts vendors and users, and they must do this not out of altruism or good citizenship but in order to compete in the new global market.

The history of the personal computer market in the past five years provides a guide to what users can expect if COS succeeds: more competition, product diversity, swift introduction of new technology and price cuts.

Users will ultimately decide the fate of the Open Systems Interconnect standards through RFPs, but only if concrete, objective tests exist to back clear, precise specifications in those RFPs. Such tests have proven difficult and expensive. No vendor will invest in multivendor testing suites only to have other vendors profit from them.

Users should consider themselves fortunate that current competition has forced vendors to cooperate in seeking standards that permit competition within standard interfaces. Users should leap forward to endorse these efforts before vendors have a chance to change and begin touting nonstandard interfaces.

Finally, users should not "certify" vendors — whatever that means — but should seek certified products. Ideally, product certification would result from independent third-party testing with costs spread equitably over a wide segment of the industry.

Users shouldn't pay for certification, except through the common appearance of that cost in all vendor prices. COS should emulate the example of Underwriters Laboratories. Users — armed with the knowledge that certified products can be specified in RFPs, objectively tested and effectively used — can then back their self-interest with purchase power.

But this begins and ends with users directly supporting COS and its programs.

Berg is president of Future-Tech, Inc., a consulting firm in Long Lake, Minn.

Special Section: IBM

NETWORK WORLD

Features
September 7, 1987

Capturing the high ground

BY L. DAVID PASSMORE
Special to Network World

Having attracted little attention in the past, IBM's network management offerings are suddenly a hot topic as telecommunications and MIS staffs search for new ways to maintain high-quality network service for their users.

Virtually everyone involved with data communications heard IBM's NetView/PC announcement, and predictions abound that NetView will become the de facto network management standard. Nevertheless, many managers are discovering that NetView is not a network management panacea.

Availability of high-quality network service is vital, particularly as more companies become dependent on data communications to conduct their core business activities. Implementing a data communications network by assembling products and services from multiple vendors is difficult enough; keeping this networking conglomeration up and running — often on an around-the-clock basis — is an even greater challenge.

> Despite NetView's drawbacks, users and vendors will be following IBM's net management lead.

Passmore is a principal at Network Strategies, Inc., a communications consulting firm in Fairfax, Va. He also teaches a class on Systems Network Architecture for Systems Technology Forum, a data communications seminar company in Fairfax.

Elements of net management

Network management encompasses a wide range of functions, including:

- **Problem management:** detection and correction of problems, including problem determination, diagnosis, bypass and recovery, and resolution.
- **Performance and accounting management:** monitoring performance and fine-tuning operations, including response time, availability and utilization as well as component delay monitoring, performance tuning and accounting.
- **Configuration and change management:** maintaining status information about network resources and controlling changes.

The high degree of customer interest in these functions has whetted the appetites of vendors looking for ways to gain a competitive advantage. In a typical multivendor environment, each vendor tries to gain ground by providing the network management system into which all other products must feed information. The network management system centrally controls all network components.

The vendor that provides this system sets the standard for network management, making it more difficult for other vendors' often incompatible products to establish a foothold within the customer environment. This, in effect, is IBM's approach with NetView and NetView/PC.

While NetView and NetView/PC are relatively new, IBM has always supported network management, particularly within Systems Network Architecture networks. To support the above capabilities, IBM has built network management functions into SNA (see Figure 1, page 30).

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Within every copy of VTAM software running in a mainframe host computer, there resides a Systems Services Control Point (SSCP) function. The SSCP acts as the network supervisor for all network components controlled by a particular host computer, referred to as that host's domain.

Thus, the SSCP provides the network management functions listed above for each of the terminals, controllers, front-end processors and links within a domain, as well as for the host itself. SNA networks with multiple host computers will contain multiple SSCPs, with each host controlling its own portion of the network, or domain.

For the SSCP in VTAM to manage network resources, the host must be able to communicate easilywith all network nodes in its domain. The SSCP in VTAM must be capable of issuing network management commands to other SNA network products and collecting information about network status from these remote nodes. In particular, hooks must be built into all SNA network products to respond to network management commands issued by VTAM.

The function residing in each node that provides network management capabilities is called a Physical Unit and is implemented in that node's product software. Every SNA network node, whether a host computer, communications controller or terminal cluster controller, has a built-in PU function. The SSCP communicates with PUs via a full-time session (logical connection) to the PU of every node within its domain.

Another way of thinking about SNA network management is that the host VTAM-resident SSCP is the centralized "master" for network management functions, while the PUs in each node act as "slaves." Sessions between the SSCP and remote node PUs facilitate the centralized collection of network management information in the host computer.

During the past year, IBM has introduced new terminology for this function, referring to VTAM SSCP hosts as Focal Points and other SNA node products containing PUs as Entry Points for network management information.

Building on SSCP

SNA products have always supported centralized network management capabilities. For instance, SNA nodes have always implemented SSCP and PU functions, starting with the introduction of the first SNA products in 1974.

Since that time, IBM has continued to add to SSCP and PU functionality through the use of new network management commands. For example, around 1980, IBM added a query command called Record Formatted Maintenance Statistics (RECFMS). RECFMS can be sent between a remote terminal cluster controller — for example, a 3274 — PU and VTAM to determine engineering change levels in the controller hardware, software or microcode, or to find the number of Synchronous Data Link Control frames received in error.

As more network management functions were added to SNA, IBM decided to develop a new generic network management command or message structure that could be used by the SSCP in VTAM to issue commands or to gather network status information. This is Network Management Vector Transport (NMVT). NMVT uses an easily extendable hierarchical encoding scheme that comprises a major vector key, subvectors and subfields.

For example, the Response-Time Monitor major vectors, identified by keys of X'0080' and X'8080', let VTAM collect response-time information from remote 3270 terminal cluster controllers. Different NMVT commands implement most of the network management functions described above.

As the need for new network management functions arises, IBM defines new major vector keys within NMVT. This requires non-IBM plug-compatible SNA product vendors to implement these new NMVT commands as well, if they are to remain equivalent to IBM SNA products.

Along with the implementation of the NMVT command, IBM has formally documented and published its SNA network management architecture.

Late in 1986, IBM released a publication titled, "Systems Network Architecture Format and Protocol Reference Manual: Management Services" (IBM document No. SC30-3346).

Other vendors can use this document to implement network management functions in their products that emulate SNA nodes. This manual complements the publication describing most other node functions, which is called "Systems Network Architecture Format and Protocol Reference Manual: Architectural Logic" (IBM document No. SC30-3112). The latter publication has been continuously updated over the past 10 years.

The NetView generation

More recently, SNA network management capabilities were enhanced by the 1986 announcement of NetView and NetView/PC (see Figure 2). These products open IBM's SNA network management architecture to non-SNA products, either from IBM or other vendors.

NetView, running in an IBM host as a VTAM network management application program, provides a cohesive set of SNA network management tools in a single product. It is IBM's response to customer complaints that its multiple network management products constituted a confusing alphabet soup. NetView in the host works in concert with the SSCP function in VTAM to support most network management functions.

NetView replaces and includes most of the functions of Network Communications Control Facility, Network Logical Data Manager (NLDM), Network Problem Determination Application, VTAM Node Control Application and Network Management Productivity Facility.

NetView/PC runs on an IBM Personal Computer AT or Personal Computer XT and extends SNA centralized network management facilities to non-SNA environments. NetView/PC permits IBM-provided or third-party application programs running in the Personal Computer to pass network management and control information — received from non-SNA products — to NetView running in an IBM mainframe.

For example, NetView/PC can receive network management messages from the Token-Ring Network Manager or from Rolm CBX Alert Monitor programs running in the Personal Computer, and it can pass this information to NetView in the host.

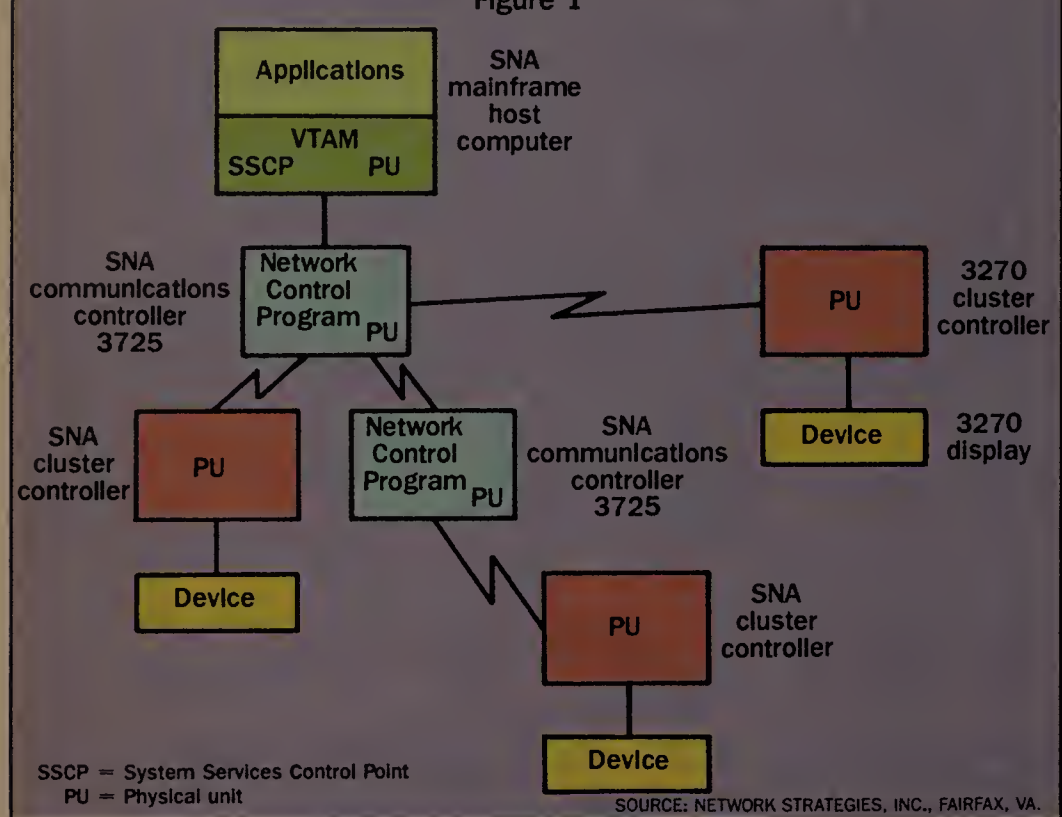
As with other SNA cluster controller nodes, NetView/PC uses an SSCP-to-PU session with VTAM to pass control information to NetView. Under IBM's new terminology, NetView/PC in support of non-SNA systems is an example of a network management Service Point passing network management information to the NetView Focal Point.

The software interface between NetView/PC and Personal Computer-resident network management application programs, Application Program Interface/Communications Services, is well-documented and well-publicized.

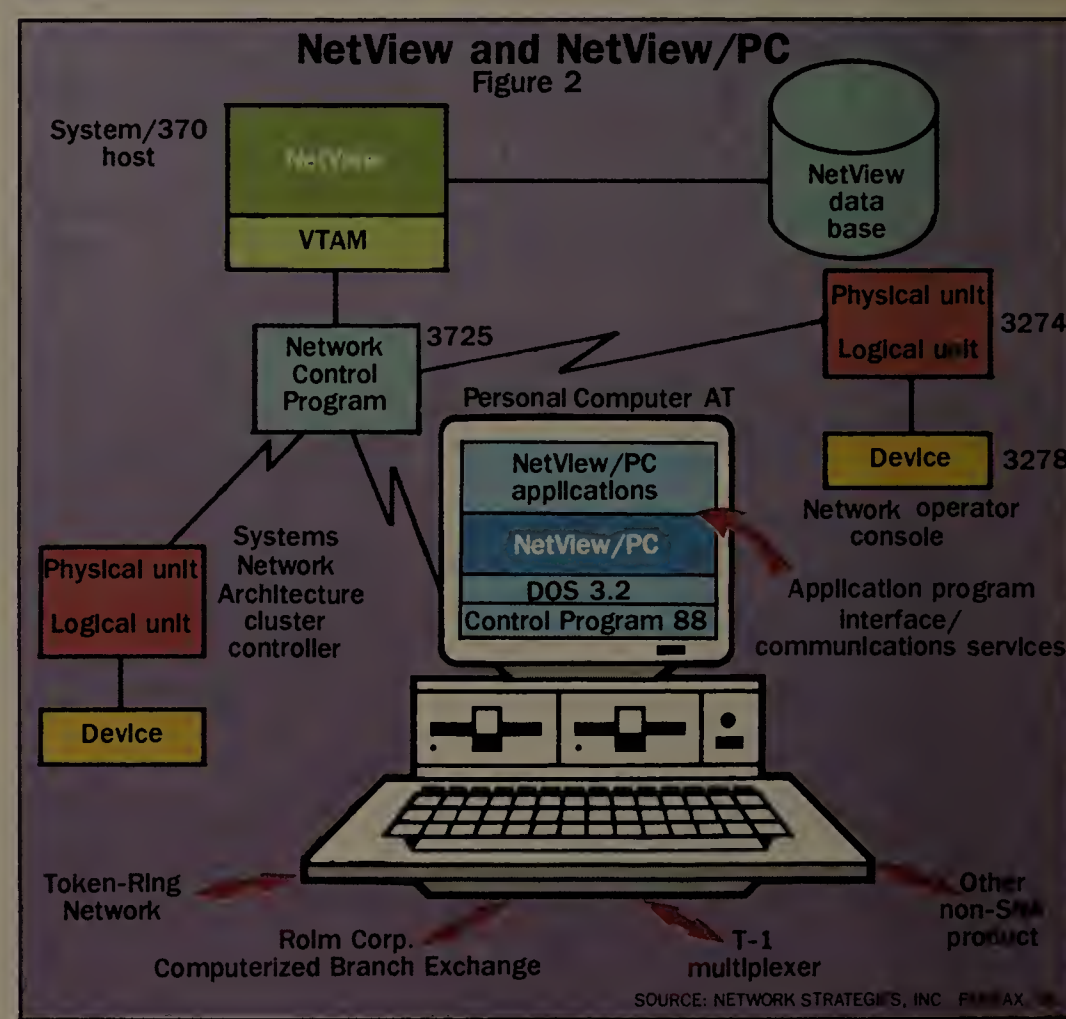
IBM is encouraging third-party network product vendors to utilize this interface and establish NetView/PC as a de facto network management standard. More than 25 major multiplexer and modem-based network management system vendors are reportedly implementing NetView/PC application programs, which will be released as future products.

Continued on page 40

Systems Network Architecture network management concepts
Figure 1



NetView and NetView/PC
Figure 2



Special Section: IBM

Aboard the Enterprise Program

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BY CLARE FLEIG
Special to Network World

Enterprise Marketing — the term conjures up images of fast-moving, fast-acting start-up companies run by entrepreneurs who look for and react to market opportunities.

It's not an image usually associated with IBM. But for the last two years, the company has been working to get communications managers who hear the words "Enterprise Marketing" to think first and foremost about IBM and its Rolm Corp. subsidiary. To date, this

Continued on next page

Fleig is director of systems research for the International Technology Group, a Los Altos, Calif.-based research company.

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From previous page
venture has met with limited success.

History

The Enterprise Marketing Program (EMP) was established in 1985 as a formal joint sales project between IBM and Rolm. The program was designed to foster commitment to IBM/Rolm products, with an emphasis on customer hand-holding and in-depth support.

According to some industry sources, the program's goal is unabashedly to increase Rolm's Computerized Branch Exchange (CBX) market share by leveraging IBM's customer base and sales resources.

But L. Scott Perry, director of telecommunications systems marketing for IBM, insists that EMP "signifies the company's intent to support enterprisewide communications needs of large companies."

EMP's somewhat qualified success may be chiefly due to the unannounced but hovering presence of the CBX III and the entrenched market share of competitors AT&T, Mitel, Inc. and Northern Telecom, Inc. IBM remains strongly committed to using the program as a sales vehicle for both IBM and Rolm connectivity products.

According to International Technology Group (ITG), IBM now has roughly 130 established Big Blue users targeted as potential customers for the program. Perry pegs the number of participant accounts as "100 or so," one-third of which are "mature" with fully staffed EMP account teams. ITG research indicates that the company is likely to try to expand that base with the release of the CBX III, anticipated in late 1987.

Strategic targets

Strategically, IBM is targeting customers that have wide-area network needs, as well as a need for new or expanded telecommunications.

In general, EMP target customers appear to be either "true Blue" or "true AT&T" shops with extensive network requirements. Examples include such IBM users as United Airlines, Inc., Texaco, Inc. and other large corporations with large data processing and telecommunications requirements.

Typical EMP customers are Fortune 500-level companies. Perry says that IBM didn't "consciously limit the program to the Fortune 500 — it just worked out that way." Most EMP accounts were already large IBM users, with IBM account teams assigned to them.

According to Perry, EMP participation typically begins in one of two ways: Either a customer approaches IBM with system integration needs, or an existing account team identifies a customer as a potential EMP participant based on their applications and support needs. Each EMP participant is assigned a dedicated EMP account team, made up of IBM and Rolm product and technical support staffers.

EMP account teams position the CBX as one of four central elements in a wide-area network, the other three being the host, local-area networks and departmental processors. The CBX is being pitched by IBM/Rolm as an adjunct to local-area networks or minicomputers in customer sites that require:

- Switched-access voice and/or data networks for corporate voice traffic, extensive dial-in communications or public data access.
- Multihost and/or multivendor environments.
- Intracompany communications.
- Customer premises telephone support.

Big Blue's pitch centers on communications that include all four key network elements. Company executives have publicly stated that the CBX is as much a part of the SNA network as the 3725 front-end processor. The CBX is just one member, albeit an important one, of the SNA networking hierarchy is the backbone of the enterprisewide networking solution. IBM won't abandon SNA for another communications umbrella.

As is typical with IBM, this four-point strategy remains tied to a Systems Network Architecture-based network, in which the SNA

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cast.

IBM, which polls 25% of its customer base every three months, is claiming EMP has helped boost the customer satisfaction rating for Rolm products from 7.5 in 1985 (on a scale of 10) to 8.0 in 1986.

In a seeming attempt to get private branch exchange customers to replace their systems with Rolm CBXs, IBM has expanded its NetView network management software to operate on both Rolm CBXs and competing PBX equipment.

One of the key obstacles IBM faces in selling EMP is that its target customers are substantially different from typical Rolm customers. Rolm's sales strength traditionally focused on small and medium-sized business customers, with typical systems in the 200 lines-and-under category. EMP targets are major corporations with PBX systems several times that size.

The market numbers tell the story. In the overall PBX market for new equipment purchases for 1986, AT&T held a 27% share, Northern Telecom held 18%, and Rolm held a 16% share. When only systems with 100 lines or fewer were counted, Rolm held an 11% share vs. 8% for AT&T and 9% for Northern Telecom.

That's a strong trend to buck, even if you're IBM.

According to Perry, EMP growth has been hampered by a lack of in-house telecommunications experts. "We're skill-constrained," he says.

The company is moving to expand its support base, however. Both Perry and Richard Sullivan, director of telecommunications market support, claim that IBM spent approximately 21,000 student days last year training telecommunications support personnel. "We're working as fast as we can," Perry says.

Customer support options

IBM views support as critical to EMP's success. This is especially true in light of the many options presented to users by the breakup of AT&T. EMP customer proposals often include options for long-distance carriers, T-1 connections and other transmission options. Such a diverse mix of system integration possibilities necessitates a large and comprehensive customer support plan.

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IBM/Rolm's support program consists of six elements:

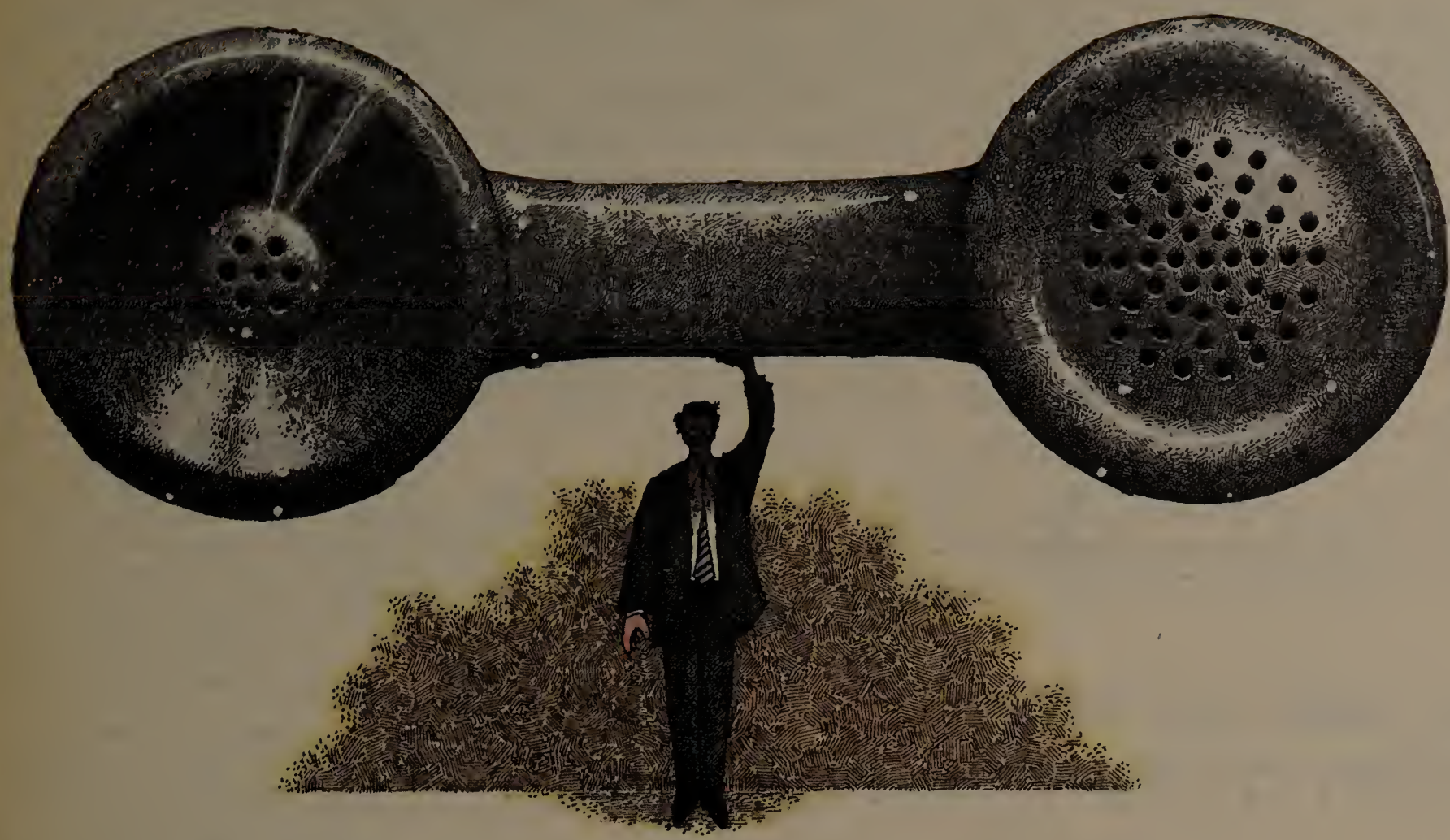
- **Planning** — Presale information is gathered and consulting takes place, with its roots in the vintage IBM Application Transfer Study approach that teams a customer's MIS and integrated circuit managers with IBM sales and technical account teams.
- **Network design** — Staff members work with customers to plan the physical layout of the network as well as the necessary hardware, software and communications components.
- **Installation** — Customers receive standard IBM installation services under terms and conditions specified by the products they purchase.
- **Service** — Customers receive standard IBM service and support options under the terms and conditions specified by product warranties and purchasing agreements.
- **Network integration** — Current processors and systems are integrated, with future requirements based on standard or custom-designed IBM/Rolm product offerings.

Varieties of support

These support needs are handled primarily through dedicated support centers staffed by IBM and Rolm marketing and technical people. The centers offer five major support group functions to EMP customers:

- **Marketing support,** which consists of basic marketing and sales support functions such as education, product information and planning.
- **Technical/installation support,** which consists of standard network integration and support services for local- and wide-area network applications.
- **Telecommunications systems integration,** which comprises two components: integration of exist-

Continued on page 34



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1 718 361-1070

From page 32
ing telecommunications links via SNA, CCITT recommendation-compatible devices and Rolm CBX and telephony products into IBM and multivendor sites; and development of specific products for a key customer.

This strategy, similar to that used by the Federal Systems Division for Complex Systems Integration, can result in custom products for one user that are never announced as part of IBM's mainstream product line.

■ **Industry applications,** which are developed for a specific customer or as a base of generic communications applications. An example of such an application is Rolm Phonemail, Version 3, released in May 1986.

■ **Customer seminars,** which, according to Perry and Sullivan, provide customer training and education that are vital to the success of EMP. "Education is fundamental to our offering," Perry emphasizes.

MCI's role

MCI Communications Corp., of which IBM owns 16.6%, is something of an enigma in the EMP scenario. MCI's services, particularly its long-distance offerings, are often components of large EMP proposals. IBM has publicly stated that MCI is only one of the carriers it will utilize. For its part, MCI is trying to expand its data networking services, both in conjunction with and independent from IBM.

In March, MCI established its Joint Activities Office to facilitate customer relationships in projects that also involve IBM. The goal of the office is to find ways for MCI and IBM to work together to win project bids.

Even so, MCI and IBM indicated at the time that they would continue to operate independently in terms of sales presentations and contacts with customers. The company line at that time was that IBM wouldn't turn away business because a customer didn't want MCI, and MCI wouldn't turn away business if a customer didn't want IBM.

The outcome of the IBM/MCI relationship appears to be a willingness by both parties to work together. But it's equally clear that, if the fit isn't right, neither company intends to bend much to make the project work.

Futures

EMP is vintage IBM, following the company credo of not just selling, but selling more. The 2-year-old program has seen its share of prosperity. But, given the level of resources IBM has provided to the program, it can't yet be called an undisputed success.

IBM and Rolm are using the full depth of their sales, educational and technical resources to reach EMP customers.

Rolm says EMP, in conjunction with sales through the Rolm Business Communications Group, resulted in fourth quarter 1986 sales of "the greatest number of data lines in Rolm's history."

To be successful, EMP must be viewed in terms of a larger IBM goal — systems integration. IBM's Sullivan notes that a "significant part" of EMP accounts is system integration.

If EMP is ever to have the kind of success IBM is aiming for, it will occur as part of IBM's systems integration strategy, not as a separate communications sales and marketing tool. ■

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If EMP is ever to have the kind of success IBM is aiming for, it will occur as part of IBM's systems integration strategy.

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NETWORK WORLD

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Special Section: IBM

Hancock's view from the helm

Continued from page 1

frequent and infectious smiles yet leaves no doubt that she has a tough side to swing into action if need be.

After joining IBM as a programmer in 1966, Hancock worked her way through the ranks to become CPD's vice-president of communications programming. She became an IBM vice-president in 1985 and was named to her current position in October 1986. She holds a bachelor's degree in mathematics from the College of New Rochelle and a master's in mathematics from Fordham University.

Hancock recently shared her views on IBM communications issues with Network World *Features Editor Steve Moore.*

What are IBM's goals in the telecommunications market, and what progress has the company made toward those goals?

We are interested in being a telecommunications vendor. We intend to provide a leadership position for our customers in telecommunications, and we've spent a lot of time talking to our customers and seeing what they want us to respond to.

Our goals are to enhance our customers' connectivity, provide them with end-to-end network management, give them total integrated systems offerings, rather than just independent pieces of the puzzle, and, finally, help them focus on the growth of their networks while decreasing the cost of that growth.

Candid comments from IBM's top telecom executive

We've broken our communications products into five main areas: data and the products that support it; voice and voice integration with data; transformation, or the ability to take many unlike products and devices and attach them to our customers' networks; bandwidth management; and, finally, network management, the glue that ties it all together.

Telecommunications is an important part of our business, and we think it's an important part of our customers' businesses. My personal perspective is that it is a technically interesting part of our business, and we'll continue to work on it.

How is CPD coordinating with IBM's Federal Systems Division (FSD) on the IBM/United Telecommunications, Inc. project to develop public telephone network Service Control Point applications?

At one time, FSD worked primarily with government contracts. But as we started looking at our customers' needs for integrated solutions, it became clear to us that, in many cases, they needed addi-

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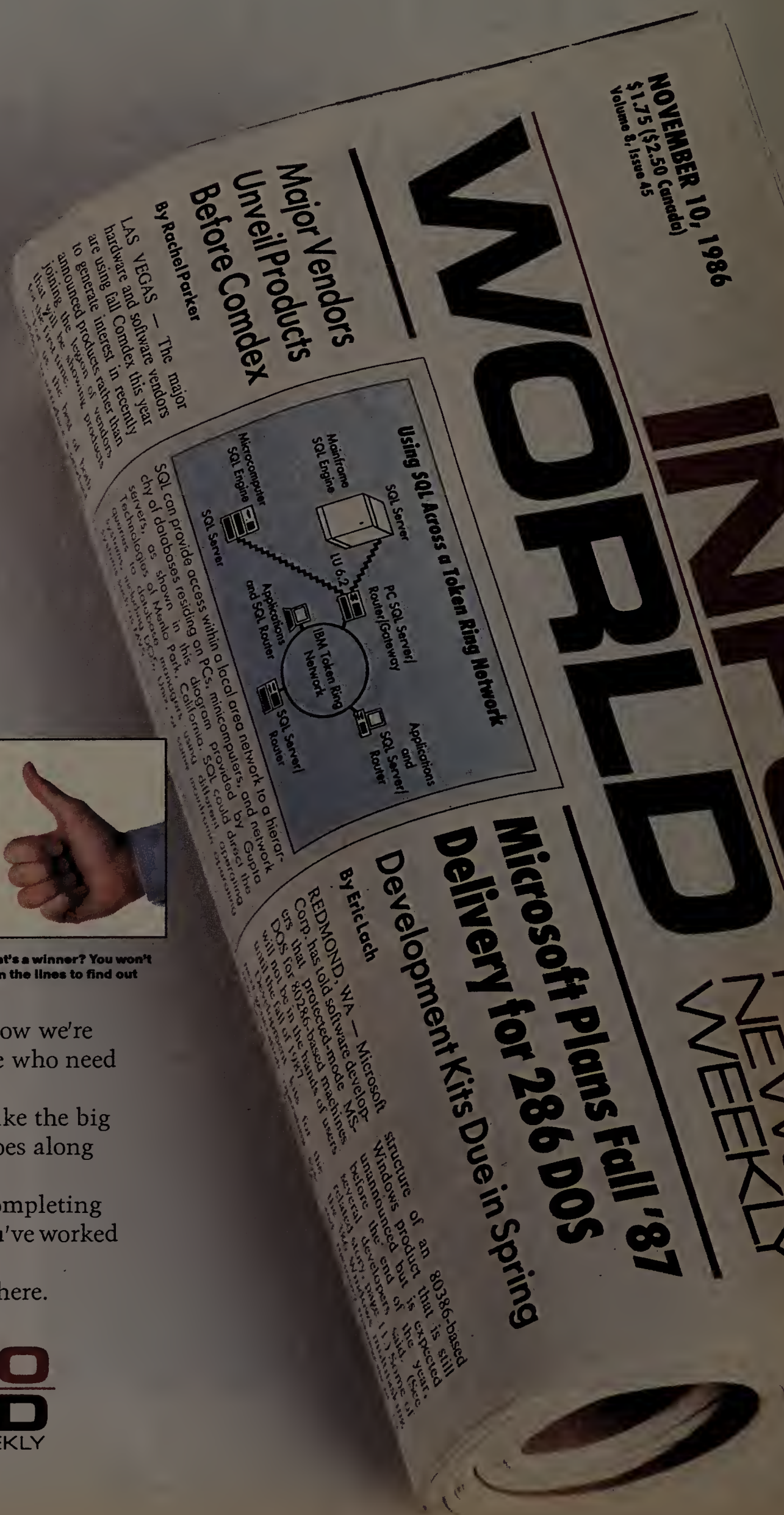

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(65) Consulting
(66) Other business services
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(75) Other (please specify) _____

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(93) Systems house/integrator/VAR
(99) Other (please specify) _____

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(10) Chairman, president, owner, partner
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3. DEPARTMENT OR FUNCTION (PLEASE CIRCLE ONE ONLY):
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(20) Accounting/finance
(30) Engineering/R&D
(40) Personnel
(50) MIS/OP
(55) Information Center
(60) Sales/marketing
(70) Purchasing
(75) Operations
(80) Education/training
(90) Other (please specify) _____

4. HOW ARE YOU INVOLVED WITH EACH OF THE FOLLOWING TYPES OF MICROCOMPUTER EQUIPMENT? (PLEASE CHECK ALL THAT APPLY):

	X Micros	Y Software	Z Peripherals
Purchase or acquire	A.	A.	A.
Establish specs	B.	B.	B.
Recommend to others	C.	C.	C.
Use them	D.	D.	D.
Approve purchase	E.	E.	E.
Evaluate or select suppliers	F.	F.	F.
Train people to use	G.	G.	G.
Sell them	H.	H.	H.
Develop or manufacture	I.	I.	I.
Not involved	J.	J.	J.
Other (please specify)	K.	K.	K.

4a. FOR ABOUT HOW MANY PERSONAL COMPUTERS OR MICROCOMPUTER SYSTEMS DO YOU HAVE THE ABOVE INVOLVEMENT?
(PLEASE CIRCLE ONE ONLY):
(L) 1-3
(M) 4-6
(N) 7-9
(O) 10-24
(P) 25-49
(Q) 50-99
(R) 100-199
(S) 200-499
(T) 500+
(U) None of the above

5. HOW MANY PEOPLE WORK JUST AT YOUR LOCATION? (PLEASE CIRCLE ONE ONLY):
(A) Less than 10
(B) 10-24
(C) 25-99
(D) 100-499
(E) 500-999
(F) 1,000-2,499
(G) 2,500-4,999
(H) 5,000-9,999
(I) 10,000 or more

6. HOW MANY PEOPLE ARE EMPLOYED BY YOUR ENTIRE COMPANY? (PLEASE CIRCLE ONE ONLY):
(A) Less than 10
(B) 10-24
(C) 25-99
(D) 100-499
(E) 500-999
(F) 1,000-2,499
(G) 2,500-4,999
(H) 5,000-9,999
(I) 10,000 or more

7. ARE THERE ANY MAINFRAME OR MINICOMPUTERS AT YOUR LOCATION?
☐ Yes ☐ No

8. DOES YOUR FIRM HAVE ANY OF THE FOLLOWING TYPES OF PERSONAL COMPUTERS OR MICRO-COMPUTER SYSTEMS AT YOUR LOCATION?
☐ Yes (If yes, please give the **quantity** below for each model)
☐ No

IF YES, PLEASE GIVE THE QUANTITY FOR EACH MODEL.

Manufacturer's Name and Model	Currently Own	Plan to Purchase Within 12 Months
L. PC and PC/XT class		
M. PC/AT class		
N. PC's based on 80386 chip		
O. PS/2 Model 30		
P. PS/2 Models 50, 60		
Q. PS/2 Model 80		
R. Laptops		
S. Engineering workstations		
T. Macintosh		
U. Macintosh II		
V. All other (please specify)		

8a. IF YES, PLEASE INDICATE THE TYPES OF OPERATING ENVIRONMENTS OR SYSTEMS UTILIZED AT YOUR LOCATION.
(PLEASE CIRCLE ALL THAT APPLY):
(A) MS-DOS or PC-DOS
(B) Unix or Xenix
(C) OS/2
(D) Other multi-user operating systems _____ (please specify)
(E) Windows
(F) Other multi-tasking environments (DESQview, GEM)
(G) Macintosh
(H) Other _____ (please specify)

9. THE PERSONAL COMPUTERS OR MICRO-COMPUTER SYSTEMS AT YOUR LOCATION HAVE THE FOLLOWING COMMUNICATIONS CAPABILITIES:
(PLEASE CIRCLE ALL THAT APPLY):
(A) Communicate with micros via modem
(B) Local area network
(C) Communicate with internal company mainframe or mini
(D) Communicate with outside service bureau, database, or time-sharing service
(E) Voice/data
(F) None of the above

10. THE PERSONAL COMPUTERS OR MICRO-COMPUTER SYSTEMS AT YOUR LOCATION ARE NORMALLY PURCHASED FROM:
(PLEASE CIRCLE ALL THAT APPLY):
(A) Retail computer store
(B) Manufacturer
(C) Distributor or wholesaler
(D) Mail order firm
(E) System house
(F) Other (please specify) _____
(G) None of the above

11. DO YOU HELP ACQUIRE, RECOMMEND, SPECIFY OR APPROVE ANY OF THE FOLLOWING:
☐ Yes (If yes, please circle all that apply): ☐ No

Software
(01) Spreadsheets
(02) Word processors
(03) Database management
(04) Accounting packages
(05) Statistics packages
(06) Communications
(07) Graphics/presentation pkg
(08) Project management
(09) Desktop publishing
(10) CAD/CAM/CAE
(11) Programming/languages
(12) Utilities
(39) Expert Systems

Peripherals
(20) Dot matrix printer
(21) Letter quality printer
(22) Plotter
(23) Laser printer
(24) Local area network
(25) Modem
(26) Monochrome monitor
(27) Color monitor (Std.)
(28) Hi-res color monitor
(29) Add-on board
(30) External hard disk
(31) Internal hard disk
(32) Optical disk
(33) Back-up systems

Computers
(13) Personal computers
(14) Multi-user micros
(15) Laptop micros
(16) Portable micros
(17) Engineering workstations
(18) Minicomputers
(19) Mainframe computers

Outside Services
(34) On-line services
(35) Education/training
(36) Maintenance
(37) Custom applications
(38) Service bureau

11a. OVER THE COURSE OF ONE YEAR, DO YOU BUY, RECOMMEND, SPECIFY OR APPROVE MICROCOMPUTERS, SOFTWARE, PERIPHERALS, OR SERVICES WORTH:
(PLEASE CIRCLE ONE ONLY):
(A) Less than $10,000
(B) $10,000 to $24,999
(C) $25,000 to $49,999
(D) $50,000 to $99,999
(E) $100,000 to $199,999
(F) $200,000 to $399,999
(G) $400,000 or more
(H) None of the above

12. DO YOU PERSONALLY BUY, RECOMMEND, SPECIFY OR APPROVE MICROCOMPUTERS, SOFTWARE, AND/OR PERIPHERALS?
☐ Yes ☐ No

IF YES, PLEASE INDICATE FOR HOW MANY PERSONAL COMPUTERS OR MICRO SYSTEMS YOU HAVE THIS INVOLVEMENT.
(PLEASE CIRCLE ONE ONLY):
(A) 1-3
(B) 4-6
(C) 7-9
(D) 10-24
(E) 25-49
(F) 50-99
(G) 100-199
(H) 200-499
(I) 500+
(J) None of the above

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tional assistance with large networks, particularly if they were looking at a massive change in their network or wanted some assistance with either its design or installation.

We established a group within FSD that is specifically responsible for commercial accounts, and one of the areas in which we agreed it would specialize is telecommunications.

At the same time, we have some groups in [the Information Systems Group] and CPD that deal with some of these large networks. I established a group to work with selected accounts, and we're often working with FSD. I think it's very important for our development divisions to have a good sense of what our customers want, why they need additional assistance and what requirements we have left unfulfilled.

Your question mentioned coordination. I have people in my division assigned to be the contact points for FSD, and the president of FSD [Gerald W. Ebker] and I do a periodic review of the accounts we're working on. So we coordinate in terms of review, in terms of having contact points and through an agreement that the people in my division will participate in design reviews along with FSD to make sure IBM is putting the right design forward.

Because the project with United Telecommunications includes quite a bit of CPD equipment, we'll continue to provide expertise and assistance to FSD, although it will provide most of the staffing that relates to that particular bid. But on all bids, we provide multiple areas of coordination between the two divisions to make sure we have a single IBM response for the customer.

Are there any specific changes being made to the 9370 for the Service Control Point application?

Not to the 9370, per se. There are functions we're adding to the System/88 for that bid, such as the Signaling System 7 capability.

What obstacles remain to be overcome in eliminating what has been referred to as the schizophrenic split between the hierarchical and peer-to-peer aspects of Systems Network Architecture networking?

I wouldn't necessarily make exactly that same split. Peer-to-peer is a name we probably generated, and it just indicates that one entity is able to talk to another entity in a peer relationship. If you think about 370 networking, we've been doing that for years. If a 370 talks to another 370, or if VTAM talks to VTAM, then they are peers, and they've had peer networking for a long time.

As we started looking at what we wanted to do for intermediate nodes as well as for things like personal computers, it became clear to us over time that the technology available in the network was decreasing in price and increasing in capability and that it didn't make sense to have the same kind of implementations.

So we came up with an implementation for the System/36, the System/38 and the PC that allowed them to have the capability to talk to each other in a peer fashion but in a different way than we had done it on the 370. That immediately imposed one restriction that said, if a PC wanted to talk to another PC, it did it one way, but if it wanted to talk to a 370 host system, because the host system didn't support that particular flow, the PC had to change its personality.

We fixed that in the June announcement when we said PCs can still talk to PCs, but if they want to do it by using the rest of the SNA system — what you're calling the hierarchical system — then they can do that, and they can use the same flows to do both. So now, we and other vendors who want to have this capability need only this single implementation.

Would you say then that IBM now has a peer-to-peer implementation of SNA across its entire product line?

I'm adamant that we have that. We've now simplified it for PC users to choose whether they would like to use the backbone network as provided by the 370-type systems to get transport services, whether they just want to have communications to other personal computers on a mechanism that doesn't require those kinds of links or whether they want to go to a System/36. Now, they can all communicate.

We also provide network management support across that entire range so, regardless of whether the PC is coming all the way up into the 370 host and using its services, or whether it is just using the services of the 370 host in order to get transport, we provide full network management services.

There is more work to be done in that total systems configuration to make it simpler for the systems programmer who is managing all that, but the end user now has peer-to-peer connections at every level of the system, whether it's the PC, the System/36, the 9370 or the 370.

But are Advanced Communications Function and VTAM being modified to support Advanced Peer-to-Peer Networking (APPN)?

The System/36, which has implemented APPN, has some architectures underneath it, one of which we call the Low Entry Networking [LEN] architecture, sometimes known as PU 2.1. The System/36 also uses LU 6.2, which is application-to-application. We changed Network Control Program [NCP] and VTAM in order to allow the PU 2.1 flows. They had already allowed the LU 6.2 flows.

APPN is something on top of all that. It is a networking scheme provided by the System/36 that includes some enhancements, for example, dynamically finding new routes, and it has some directory enhancements in it. We did not change VTAM and NCP to know about those enhancements.

The next question is, 'Ah, but aren't they interesting requirements?' And the answer is, 'Yes, they are.' They are absolutely clear customer requirements, and we need to provide that capability for the 370. It's not clear you need to provide it in exactly the same way, but if the question is, 'Don't both of those functions you announced for the System/36 also sound good to you for the 370?' the answer is yes.

Does the fact that the APPN dynamic-routing capability can't be efficiently extended beyond about 100 nodes in large SNA networks put IBM at a disadvantage relative to Digital Equipment Corp.?

First of all, I'm not aware of a 100-node limitation. A performance limitation may eventually show up in terms of how many of these systems can be doing all this dynamically, but I believe there are ways one could manage that if, in fact, you found there was a performance limitation in terms of how much dynamic addressing you are doing.

I'm not going to refer directly to DEC or DECnet, but I will tell you that I think the work we have in SNA, the work being done by APPN, LU 6.2 and the LEN architecture and its support by the VTAM host, is unmatched in the industry. I am not aware of any other architecture as robust, and I believe it gives us strength beyond any other vendor. I believe the network management we provide is unmatched in the industry. I'm not sure I'd get too many challenges on that.

We did notice our customers were coming back to us with very specific requirements saying, 'We'd like you to decrease the amount of time it takes to install your systems, and we'd like you to decrease the amount of time it takes to add nodes into your network.'

Many of the things you saw us doing in June were to work specifically on those kinds of items. We dramatically decreased the amount of time it takes to install a brand-new 9370 with VTAM and NetView, and we've included them in the VM/IS package. We've timed those kinds of implementations, and it takes less than half a day to install a brand-new system with the software.

We have simplified the way our systems communicate with each other, and we've simplifed the way we do our gens and the tasks we ask the operators to do in order to install the systems. Underlying all that is my firm belief that our architecture approach is second to none.

Why wasn't NetView designed from the outset so that, in addition to receiving information from non-IBM devices, a NetView operator could issue commands to those devices?

First of all, you are right that much of the architecture we originally did was intended to take advantage of intelligence in the network and flow it in. Many of our

Continued on next page

"I think it's very important for our development divisions to have a good sense of what our customers want and what requirements we have left unfulfilled."

"I'm not going to refer directly to DEC or DECnet, but I will tell you I think the work we have in SNA and the work being done by APPN is unmatched in the industry."

"We dramatically decreased the amount of time it takes to install a brand-new 9370 with VTAM and NetView, and we've included them in the VM/IS package."

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devices — hardware initially and software later — were getting intelligent enough so that rather than asking them, in some cases, they could tell us. And so our first mode of operation was to say, 'Let's take advantage of that intelligence and have the devices tell us what they're finding out about their environment.' For example, if one of our modems notices the line is degrading, it's got the intelligence in it, so why not send it in?

Then once we had [Network Communications Control Facility] and later NetView, we noticed that networks were getting large enough and the PC was getting universal enough that we should start taking advantage of some of that technology to help us with network management. We were concerned about the amount of data capture hosts had to do, and we came up with NetView/PC.

We then saw that NetView/PC provided a way for us to help manage non-SNA devices, particularly T-1 multiplexers, private branch exchanges and local-area networks. NetView/PC initially supported one-way communications, and then, with the very next release, we announced two-way communications.

We can send commands back out to some of our modems and literally ask them how things are going and tell them what information they have to send back in. With the announcement of the 9370, we said remote NetViews can send information to the host. We understand there's a requirement for the host to ask for information from the NetViews, so we are working toward that two-way communication.

What is the relationship between the Distributed Data Management (DDM) architecture and the Systems Application Architecture (SAA)?

DDM is a capability for us to be able to distribute data and send information about data back and forth. We do use DDM as part of NetView/PC and its support into the host. For example, NetView/PC does use DDM to come into CICS when it has the call detail recorder application supporting the Rolm CBX, and to send that information up to the host. So you're seeing us using DDM now in some of our system implementations.

DDM is not listed as part of SAA. We do understand that we have a requirement to look at that as part of SAA, and the team that is responsible for that is looking at how we should be doing it.

As Open Systems Interconnect (OSI) network management standards are completed between now and 1989 or so, will they be integrated into NetView?

It's not clear to me right now how we would do the packaging, and integration is a packaging question. It's too early to tell whether we would need to integrate it or provide it separately.

For business reasons and customer reasons, you would make different choices.

But I will tell you that IBM is extremely committed to OSI. We are an active member of the Corporation for Open Systems, and I am on its executive committee. I believe OSI is an extremely good way for customers to take networking solutions from different vendors and enable them to communicate with each other.

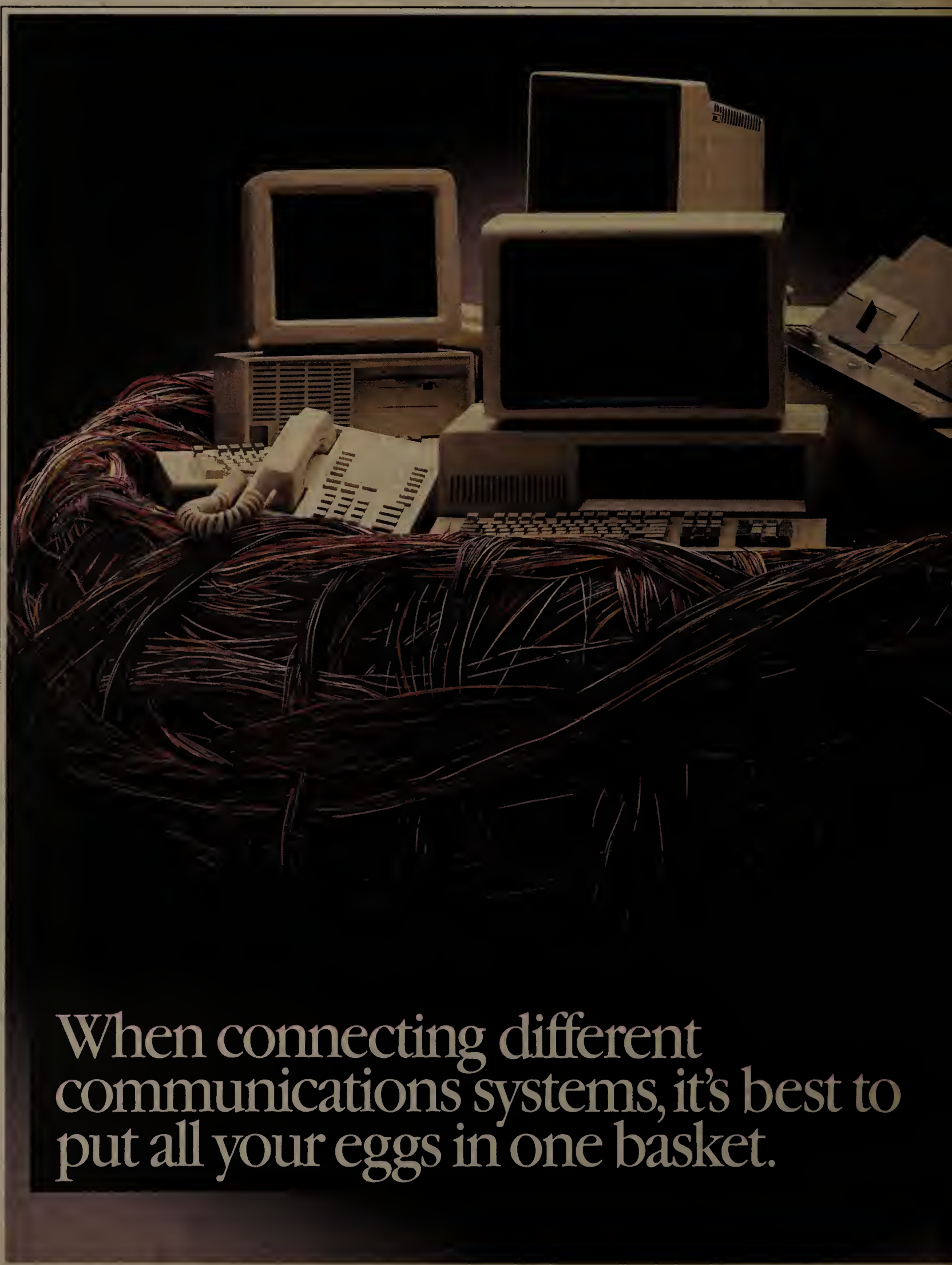
> "We are responding to requests for even more network management for X.25 kinds of links."

We now have offerings through all seven layers that respond to the OSI protocols. In addition, we have people who are working on the standards relative to network management, and we have indicated to people in the standards organizations some of the ways we go about doing network management, such as alerts.

As the international standards roll out, I would expect us to be very responsive to a network management standard. I believe it will be several years before we have it, and so in the meantime we are providing network management support using NetView.

If you consider X.25 part of the OSI standard, which it is at the lower layers, we provide NetView support for X.25. And we are responding to customers' requests for even more network management for X.25 kinds of links.

Many large companies these days want to manage their networks as self-sufficient profit centers, rather than as service-department cost centers. The ability to allocate and charge back



network costs based on usage is an important goal for managers of such networks, yet NetView currently does not have the ability to measure traffic volumes in a way that supports such efforts. What is IBM doing to respond to this user requirement?

NetView does provide some session monitoring and some capabilities for keeping track of what is occurring correctly and incorrectly in the system. Customers did come to us, and some of them are basing some accounting routines on some of that NetView data.

It is our view that it is not the NetView product as we know it today that one should be using for that but rather a product called Network Performance Monitor [NPM]. We do not provide the specific accounting routines. That has been a requirement I have looked at for years, and it has varied from user to user in terms of exactly how they want to do their accounting packages. So we're not providing the accounting package, per se.

But we believe NPM will give our customers the information they need to do that usage-based cost accounting.

We are supporting many of our customers as they go about building utility networks, and many of them do want to bill back to the users based on the usage of the network; it gives them control, and it's also fair.

> "We believe NPM will give our customers the information they need to do usage-based cost accounting."

Is NPM also the product users should consider for improvement of their LU 6.2 performance monitoring functions?

We're trying to understand that requirement. I have heard about that a couple of times, and specific customers have volunteered to take my people through exactly what they mean by needing more LU 6.2 data.

We have some tools for providing LU 6.2 data, and we are working with customers to see what we can do to enhance those tools. They want transaction data, rather than session data, and I suspect we would levy that requirement against the NCP VTAM, which handles the sessions, and then the NPM, which would get the data.

What are the key success factors you've observed in implementations of corporate utility networks?

You have to get agreement. If you just let it happen, more often than not, you're going to get split networks. So first of all, there's a management decision that there is authority for the network and that someone is in charge of providing it. Networks don't just happen.

Second, management normally has a long-range view of what it is trying to provide and what the system should look like. It's usually strategic thinking, rather than tactical thinking. Management always has to make some tactical decisions, but there is a plan that says, 'Here's what we're doing now, and here's what we're trying to get to.'

Finally, they usually pick a system structure. Many of the networks I'm involved with are SNA networks, and our customers take advantage of the fact that we have an architected systems management approach.

But before I ever show up, our customers have often picked a design and an implementation. They may have decided, for example, whether it is a two-tier or three-tier network, how many interfaces there are into the network, what wiring schemes to use, what types of lines to use and how to manage them, how many control points there would be and so on.

It's a managed systems approach based on a long-term, return-on-investment strategy. Finally, management gets into discussions of how to get costs back to the users and how to convince the CEO that this utility is a corporate asset, which makes their company different from other companies and gives them a competitive edge. When they start looking at it that way, the investment makes sense.

Why hasn't IBM moved as quickly to support X.400 in the U.S. as it has in Europe? Don't users in this country have the same requirement for messaging standards support?

We saw the requirement for OSI much more immediately in Europe than we did in the U.S. That was true originally for X.25, and I believe it is still true today. There is much more of a requirement in Eu-

Continued on next page

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rope — in some cases, mandated by governments — for customers to install products based on OSI. Therefore, outside the U.S., we announced a product with a programming interface at Levels 4 and 5; we announced another product that allows the OSI protocols to come into CICS, IMS and TSO; and then we announced a capability for X.400 and a connection into DISOSS.

There are some customers in the U.S. who have asked me for some of those products. We are not seeing the demand as clearly here as we're seeing it in Europe, but I expect to see it here, and we expect over time to announce products that support X.400 in the U.S.

How does CPD participate in IBM's Enterprise Marketing Program (EMP)?

EMP is primarily a marketing program. It is managed by marketing, and the account selection is done by marketing. The EMP accounts have a strong telecommunications flavor to them in many cases, and, to that extent, CPD does have a very specific marketing support program to help the marketing units.

We have people they can come to when they require help with special bids, and they come to us if they need particular products. We run what we call road shows, where people from CPD who have particular product or technical expertise go out and demonstrate a particular product.

Do you feel you've had to work any harder to reach your current position within IBM than a man might have under similar circumstances?

I think women who are attempting to get ahead do tend to put in a tremendous amount of effort. Whether all that effort is required in each case, I'm not sure. But we do tend to put in effort.

IBM is very specifically working on promoting females within the business. As we look at career growth, we do monitor women as well as blacks and other minorities, and we have programs in place to try to encourage those people to meet their own potential.

If you look at it in that regard, being female hasn't hurt me at all. To the extent that either I had the talent or I was able to demonstrate the ability to handle the job, the company was very willing to keep advancing me to the next step.

I will also tell you that there were several cases in which I believe management took a risk and asked me to take the next job at a point when I didn't think I was quite ready for it. That happened on at least two occasions where I think they pushed and asked me to try to assume something that, maybe, psychologically I wasn't ready for. So do I think women work hard? Yes, I think most of us do. Did the company demand it of us? Well, I'm not sure. In fact, I believe the company is supporting our progress. But the hard work some of us do makes us feel more comfortable and that we deserve that support.

> "We expect over time to announce products that support X.400 in the U.S."

What are some of the issues that come up when you think about NetView in terms of network security?

Several years ago I was working on some product implementations, and we were providing a lot of security techniques, things like cryptography and so on. We made offerings and more offerings, and suddenly I noticed that there was not a lot of interest in some of them.

In some cases, you have a technology that is ahead of the user's understanding of the need for that technology. But I would say that in the past year our customers started putting security higher and higher on their lists.

There are a lot of reasons for that. The banking and insurance industries became more sensitive to that requirement. Now they tell me that their accountants come in and say, 'I need to verify that your systems are secure,' and they'll come to IBM and say, 'What does he mean, and how do I do that?'

We have a product called [Resource Access Control Facility], which we have now on MVS as well as VM, that we've deliberately rolled out across our systems to provide security of access to data. VTAM has always had some cryptography elements to it, and it has a logon procedure that is very precise. And one of the reasons we were very careful with our implementation of switched lines was because they do have some security problems attached to them, particularly during recovery procedures, and we had to work through that.

Because the security requirement started coming in more and more from customers and from the government, we refocused on it, and in June we announced some products as part of NetView that do provide network security by handling access control at a logon. We are continuing to work with customers to see if there is more we need to do for them in terms of network security.

Capturing the high ground

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With the introduction of the 9370, IBM has had to augment its network management products to support departmental computing environments.

For larger mainframe SNA networks, defining the network to VTAM — that is, creating VTAM lists — has been a time-consuming and often difficult task that requires skilled, highly paid and hard-to-find personnel.

For smaller SNA networks supporting 9370 communications, these skilled personnel may not be available. As a result, NetView has recently been enhanced to include the NetView Network Definer, a facility that permits operators of 9370s running VM/SP to define their network configurations to VTAM more easily in an interactive fashion, through the use of predefined menus and prompts.

For larger SNA networks, in which multiple 9370s are used as distributed processors connected to mainframes, IBM has enhanced NetView to provide remote system console support. This permits all 9370 operations, including network management functions, to be performed by a single remote central site, thereby minimizing the number of skilled network management workers required throughout the network.

Through this NetView feature, IBM is migrating toward total unattended operation of remote 370-architecture hosts.

Finally, NetView has recently been enhanced to monitor peer-to-peer as well as hierarchical SNA sessions ("SNA: struck by schizophrenia," *NW*, June 15), allowing centralized network management of LU 6.2 sessions between PU 2.1 nodes.

IBM blues

So, has IBM captured the high ground of network management through the introduction of NetView and NetView/PC? Not quite. Many major users and vendors are reserving judgment until IBM addresses some major weaknesses of these products.

For example, NetView and NetView/PC still have a major shortcoming when they are used to provide network management for non-SNA products: Communications is inherently one-way, from the remote devices supplying status information to the NetView in the host. There's currently no easy way for a NetView operator to issue control commands to non-SNA products in the network.

Another missing piece is the lack of Personal System/2 support for NetView/PC. Support is missing because NetView/PC requires a Realtime Interface Co-Processor board, which is not compatible with the Micro-Channel bus of most Personal System/2s.

It is possible that IBM intends to migrate NetView/PC to the Operating System/2 environment, which as a multitasking operating system is inherently more suitable than MS-DOS for support of real-time communications.

In the meantime, however, the current NetView/PC hardware base may be unable to provide adequate performance.

Finally, IBM's network management products still do not address customer requirements for usage-based SNA network chargebacks. This shortcoming has become increasingly important as many Fortune 500 companies have integrated all their data communications into a single corporate utility SNA network. These companies have no way to allocate network costs based upon the amount of traffic being transmitted.

NLDM — now integrated into NetView — provides only 3270 traffic counts. The IBM product closest to being able to provide such information, Network Performance Monitor (NPM), measures traffic volumes separately for each 37XX/network control program (NCP) node and consumes 10% of the throughput of customer front-end processors when simultaneously monitoring traffic volumes on all circuits.

This approach requires customers to write custom applications in the host that can process and piece together data collected by NPM from multiple NCP nodes. That is a major undertaking that's probably not worth the effort. The inability of IBM products to collect traffic volumes for chargeback purposes is even more surprising given that this function is standard with most X.25 packet network products.

Despite weaknesses in IBM's current network management products, NetView and NetView/PC are likely to become de facto standards simply because international standards for network management are still under development and other vendors may not have enough clout to establish a rival de facto standard.

Open Systems Interconnect (OSI) standards for network management are more than two years away from being finalized, and the availability of products implementing these standards is even further off.

Current estimates are for the OSI Management Framework and Common Management Information Service protocols to become international standards by the summer of 1988, but the five Specific Management Information Services and Protocols necessary to implement products are not expected to become standards until late 1989.

By that time, products implementing IBM's network management architecture will be widely used, particularly by SNA network customers.

Through the implementation of centralized network management facilities in all of its SNA products and the introduction of products such as NetView/PC, IBM is well-positioned to lead the industry in network management. And, with the current lack of OSI network management standards, IBM can be expected to dominate this area for some time to come.

MCI sells United on net

continued from page 2

different weighted values to the criteria," Nevers said. "The idea was to eliminate any preconceived ideas or prejudices in making the selection."

One important though not overriding factor in the selection process was that MCI offered a software tool that can be used in conjunction with IBM's NetView network management system to monitor the operating status of VNET.

MCI's software interface allows network and circuit alarms to be relayed via IBM's NetView PC to a NetView terminal.

"We do not want to proliferate our network management system as our networks grow," Nevers said. United Airlines is a large IBM Systems Network Architecture shop that uses NetView as a network management tool. Despite this, he said, the company has not made a decision to embrace NetView as its only network management system.

According to Geoffrey Johnson, an analyst for Argus Research Corp. in New York, the United Airlines contract may be a breakthrough for MCI, which needs to attract more business customers, he said.

Johnson said the contract with United Airlines could be a sign that IBM is beginning to offer marketing guidance and support. "MCI's marketing efforts have been floundering," Johnson said.

Frank Governali, assistant vice-president at Kidder Peabody & Co., Inc. in New York, said that IBM and MCI are likely to begin working together more closely in landing selected accounts.

"The key is whether cooperative efforts make sense from the customers' point of view," he said. "IBM's No. 1 concern will continue to be the computer industry. But it will work with MCI when it can add value to meet the customers' needs."

Glenn Powers, a senior analyst with Northern Business Information, Inc. in New York, said IBM's involvement in the United Airlines contract was a way of supporting the wide-area networking needs of one of its large computer hardware customers.

"The wide-area network market is becoming an interesting one for IBM," Powers said. "It can meet its customers' needs through alliances with others. For example, its relationship with [Network Equipment Technologies, Inc.] helps private net customers meet T-1 needs."

NCR ends product lines

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"still being made," Wolff said. The packet net equipment is manufactured by Fort Lauderdale, Fla.-based Telematics International, Inc. and resold under an OEM contract. One customer, the Research Library Group at Stanford University in Stanford, Calif., said NCR Comten informed it that the account would be turned over to Telematics.

Wolff said NCR Comten and Telematics are negotiating an arrangement for termination of their OEM contract. NCR Comten's decision to discontinue packet network sales "in no way affects the company's commitment to providing an X.25 interface to Comten communications processors," Wolff added.

Comten's exit from the packet-switching and modem markets is aimed at "getting a higher return on investment by redirecting the resources from the two product lines into our mainline business of communications processors," Wolff explained. Company executives declined to be interviewed.

Wolff said Comten is "trying to find places" for the staff dedicated to the modem and packet-switching product lines but would not comment on whether any would be laid off.

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Letters:

Editor:

We disagree with a few points in the Aug. 10 editorial, "Is ISDN obsolete?" by James Herman. He suggests two reasons that Integrated Services Digital Network standards are not optimal for today's communications: because the bearer channel bandwidth of 64K bit/sec was based on past voice digital-encoding needs and because it is now too large for voice and too small for data applications. We feel ISDN can meet today's and tomorrow's communications needs because it is an evolving, flexible technology.

When the Consultative Committee on International Telephony and Telegraphy meets in plenary session in October 1988, it will adopt as formal recommendations the standards developed in the last four-year study period (1985 to 1988). These recommendations reflect a basic premise behind ISDN development — that ISDN will evolve from the existing telecommunications network. The new standards build on the old; consequently, some ISDN recommendations will continue to evolve and will become more complete, while others will be added based on new work. As a result, ISDN service providers and equipment vendors can offer products to meet existing requirements, knowing that additional recommendations can be incorporated in the future.

The editorial also questions the choice of 64K bit/sec as a standard information transfer rate. One could build a case that any standard, in this case 64K bit/sec, is better than none. This selection was based on ISDN's evolution premise and supports the large amount of equipment that supports 64K bit/sec.

Regardless, the ISDN standards bodies are acutely aware that needs for higher information transfer rates for video, audio and data transmission have increased dramatically. As a result, the ISDN standards are defining channel bandwidths ranging from the 16K bit/sec D channel signaling on a basic rate interface to several megabits on broadband ISDN interfaces. The work being done on broadband ISDN, both in Europe and North America, builds on today's requirements, thus providing an evolutionary path for the future.

As the editorial notes, a 64K bit/sec transfer rate is unnecessary for a single voice call given today's voice-encoding algorithms. However, the ISDN standards bodies have already provided for newer techniques, such as Adaptive Differential Pulse Code Modulation, that reduce the rate required for a voice call.

Our last point regards the implication that this is not the right time to adopt standards. Of course, the ideal time to adopt standards was yesterday. The next best time is now. The marketplace is evolving toward open standards for many good reasons. A major benefit of standardization is that it allows economies of scale that can dramatically reduce product costs. A standard permits market volumes large enough to justify the years of development and millions of dollars necessary to implement products with very large scale integration technology.

ISDN is a step in the right direction for universal communications standards.

Jerome Kemp
Chief engineer
Advanced Development

H. Richard Schwarz
Senior systems engineer
Systems Engineering
NCR Comten, Inc.

Editor:

The article by John O'Leary in the Aug. 24 issue of *Network World* ("Diverse nets are high-risk groups,") was a very good discussion of security issues in environments where intervendor communications is used. It is difficult to integrate the security systems of diverse computers so resources are properly protected.

There is a significant implementation not mentioned in the article. The intervendor file-transfer product, XCOM 6.2, from Spectrum Concepts, Inc. in New York, provides integrated security supporting, for example, ACF2 on an MVS host transferring data to VMS, with the integrated security system on a VAX.

XCOM 6.2 does such intervendor networking protection by using both the security architecture of LU 6.2, on systems (such as the IBM System/38) that need it and also links to the integrated or packaged security products such as Top Secret or RACF.

Network World is to be commended for bringing discussion of this issue to the fore.

James F. Kelly
Teleprocessing Connection, Inc.

Editor:

Needless to say, we were surprised and disappointed by Brian Jeffery's opinion piece entitled, "Cement Overshoes" (*NW*, Aug. 3). Surely your readers expect and deserve much more from *Network World* than this unseemly and failed attempt to be humorous at the expense of IBM and Rolm Corp. employees. If this is an example of Jeffery's scholarship, perhaps he ought to refrain from calling attention to it.

IBM and Rolm have a great deal to offer to one another and to our customers. Together, we are building an information handling capability that otherwise would not be possible for us. Our employees and customers understand this. You have just begun to see the fruits of this association.

James C. Reilly
Director
Communications Operations
IBM

Letters may be edited for space and clarity.

Novell unwraps server

continued from page 2

ports 48 network adapters and allows users to link the local net into one remote network.

Both NetWare products run on nondedicated servers, such as IBM Personal Computer XTs, ATs and compatibles.

Neither requires a key card, as have other versions of NetWare. Level I is available this month and Level II is slated for delivery in the first quarter of 1988.

In the announcement with Excelan, Novell said it will jointly market Excelan's TCP/IP Workstation for NetWare. This is the second TCP/IP offering introduced by Novell; the company also has an agreement with Micom-Interlan, Inc. for a gateway product based on the Department of Defense's TCP/IP networking protocols.

Unlike the gateway approach of the Micom-Interlan product, Excelan's TCP/IP implementation resides on individual network workstations. As a result, these workstations have concurrent access to TCP/IP and NetWare environments.

The $995 hardware and software package will be available in December and includes Excelan's EXOS 205T Intelligent Ethernet Controller, TCP/IP network software, TCP/IP applications and the NetWare driver kit developed by Excelan.

Apple connectivity

Novell's Craig Burton said Excelan could help Novell provide network links to personal computers from Apple Computer, Inc. Novell announced a year ago that it would support TCP/IP and Apple computers. While it has delivered on TCP/IP, Novell has yet to introduce network connections for the Macintosh.

Looking to support Apple computers itself, Excelan acquired Kinetics, Inc. early this summer. Kinetics supplies high-end networking products for Apple computers. "That's a key technology we're interested in," Burton said.

AT&T unveils computers

continued from page 2

peer-to-peer protocol to work in 3B4000 environments. It allows the 3B4000 to communicate with other LU 6.2 programs on other 3B computers or non-AT&T computers within an IBM Systems Network Architecture environment.

The TCP/IP interface software supports Unix System V features and provides a means for clustering AT&T computers and communicating with other manufacturers' equipment, AT&T said.

In addition, Binary Synchronous Communications/RJE emulation software provides the minicomputer with support for IBM's BSC protocol. The interface costs $5,000 for the 3B4000's master processor and $7,000 for each adjunct processor.

In addition, the minicomputer supports AT&T Document Exchange, an electronic mail system that translates documents and mail messages into formats required by other systems, such as IBM's DISOSS and Professional Office System, Wang Laboratories, Inc.'s OIS and VS, and Digital Equipment Corp.'s All-In-1.

AT&T also unveiled the 32-bit 6386 Workgroup System, a microcomputer available in desktop and floor-standing models, which support 20 and 32 simultaneous users, respectively. According to AT&T, the 6386 is capable of "supporting Unix System V applications concurrently with up to eight MS-DOS applications."

Both models are compatible with Starlan, IBM's PC Network and Token-Ring Network, and Novell, Inc.'s NetWare network operating system. Prices for the two vary with configuration from $4,899 to $10,395.

The new release of ISN unveiled last week, Release 4.1, enhances network management and billing capabilities and supports asynchronous and fiber interfaces to 3B2 and 3B4000 computers. The ISN's network management software, StarKeeper, now stores and reports traffic and performance measurements. It also offers real-time fault reporting, alarms and call-detail reporting. Release 4.1 will be available in the first quarter of 1988 at upgrade prices ranging from $6,375 to $13,125.

Version 2.0 of Starlan, also released, provides an improved interface to IBM's Network Basic I/O System, automatic parameter setting at installation for optimizing server operation, improved menus and a new server command-line parameter to support connections such as the System 25 Remote PC Service. A 50-copy license costs $2,995.

Enhancements to AT&T Mail include a set of software products called Private Message Exchange (PMX), providing different types of private messaging networks within the worldwide E-mail service. PMX/PC creates a personal computer-based departmental mail system. PMX/Term is a Unix-based program for standard data terminal users. PMX/Starmail gives Starlan users an E-mail system linking to other AT&T Mail services.

AT&T also said it would introduce an X.400 interface for the mail service at Telecom '87 in October in Geneva, Switzerland. Prices range from $495 to $4,000, depending on the processor.

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Expert system monitors nets

continued from page 1

here, designed its Network Problem Determination Expert System (NPDES) to simplify network management. The system has helped reduce network and operations staff from 62 to 36 in two years.

NPDES can pinpoint problems in software and operational mistakes made by end users, and it can get status information about specific devices in the network by interacting with VTAM on one of the company's two IBM host computers.

"This system goes through the network and checks the status of users' terminal and control units, all paths and all applications," said Charlie Snell, director of communications and computing at Harris.

NPDES runs on an IBM Personal Computer AT-compatible outfitted with a Digital Communications Associates, Inc. Irma board that enables the microcomputer to communicate with the mainframe as a terminal.

The program is based on an expert system shell called Insight 2+ from Level Five Research Corp. of Indialantic, Fla. The Insight 2+ package provides the inference engine for the expert system, helping pinpoint network problems by following rules — a series of "if, then" types of statements — input by Harris technicians.

The rules were written after the so-called knowledge acquisition stage of the system's design. "We sat down with our network experts and asked them to tell us what they would do when given a certain piece of information, what additional information they would ask for. We went through the whole problem solving phase," Snell said. "After picking their brains, we wrote their responses into the rules."

The system currently has 200 rules and helps solve about 90% of the queries it receives by recommending action to the operator. It identifies hardware failures, however, without recommending action.

A future version of NPDES will be able to issue its own commands to VTAM to correct the problem without intervention from an operator. Snell estimated that NPDES should begin to make modifications in the network in three months.

NPDES frees experienced technicians from the day-to-day grind of solving low-level problems on the 6,000-terminal network and makes the desk more approachable to the inexperienced user.

"We wanted to staff the help desk with people who have good interpersonal skills because we found our employees responded better to a friendly voice and courteous treatment than they did to a technician — who may imply just by tone of voice that a question is stupid," Snell said.

Harris actually developed NPDES for microcomputer use after developing an early version that ran on an IBM 3084 mainframe under the IBM Expert System Environment package.

The IBM package proved that the concept was feasible, but it also proved too expensive and inflexible because of extensive operating system modifications required to implement the system.

While NPDES monitors the computer side of Harris' SNA network, monitoring of transmission facilities is controlled by another Harris-developed tool called the Alarm Interface Reporting System (AIRS). Eventually, the company hopes to link the capabilities of NPDES and AIRS through IBM's NetView PC, the interface to NetView, IBM's mainframe-resident network management product.

Harris developed AIRS to allow single-site monitoring of its microwave and fiber-optic transmission equipment, another step in the company's effort to "automate the computer center as much as possible," Snell said. "This offers a possibility to have a complete view of the network in one spot."

AIRS consists of an IBM-compatible Harris personal computer outfitted with a Harris-developed Line Control Monitor (LCM) board. The LCM is wired to the alarm systems of microwave and fiber-optic equipment. "The center constantly dials around to remote locations to pull in summary status and set off an audible and visual alarm to operators if anything is wrong," Snell said.

"At this point, it works on our personal computer, but we plan to rework the system with the NetView PC and tie it into NetView — giving us a central monitoring site for the whole net," he continued.

"We've always had people who monitored lines and the physical attributes of the network, and we've always had our SNA experts, who are primarily software-oriented," said Snell. "Now, we want to bring those two areas of technology together, and we're going to try to use IBM's NetView to do that."

Ultimately, the company intends to tie the voice network into the center as well.

"We're awaiting the products from our Digital Telephone Systems Division to interface our PBXs with NetView, so I can't really say how far away we are from pulling the voice net into the central monitoring site," he said.

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AT&T discount plan bows

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that other providers have benefited as a result. AT&T's competitors in the T-1 market include MCI Communications Corp., US Sprint Communications Co., National Telecommunications Network (NTN) and a raft of regional fiber-optic carriers.

"The availability of volume discounts from other vendors has caused AT&T substantial competitive losses," AT&T's filing stated. "At least three major nationwide vendors and 14 regional vendors are competing aggressively with AT&T" in the T-1 market, it added.

"Within the last year, AT&T lost at least seven national accounts to MCI, US Sprint, NTN and Litel [Telecommunications Corp.] because our T-1 rates were not competitive," said Charles Yates, AT&T vice-president of market planning, in comments filed with the FCC. "AT&T expects to lose $50 million in T-1 revenue if we don't provide a volume pricing option," Yates said.

The price discounts will apply to customers' total volume T-1 traffic. Discounts will apply only to the long-distance or interoffice channel of the T-1 circuit and not the local connections provided by local exchange carriers.

Currently, the price for T-1 service consists of a $2,600 fixed monthly charge and a $15.50 per mile charge. Under the discount plan, the fixed and per mile charges will decline as the length of commitment and volume of use increase.

Customers opting for the volume discount plan will be charged an additional "per plan" monthly service charge, which varies with the length of contract and volume of use. The per plan charge ranges from $3,000 per month at the lowest volume and term to a maximum of $110,000 at the highest.

For example, a customer that commits to using $50,000-worth of T-1 service per month for one year under the discount plan would pay a $3,000 per plan fee, a fixed monthly charge of $2,300 and $14.90 per mile. Without the discount plan, the same customer would pay a $2,600 fixed fee and $15.50 per mile. The volume discount in this case is less than 1%. A customer spending $1 million per month for five years under the discount plan would receive a 33% discount. That user would pay a $100,000 per plan fee, a $1,500 fixed charge and a $9.50 per mile charge.

A customer spending $1 million per month for five years under the discount plan would receive a 33% discount. That user would pay a $100,000 per plan fee, a $1,500 fixed charge and a $9.50 per mile charge.

"The only reason AT&T is cracking on T-1 prices is because of the oversupply of fiber-optic transmission capacity and the competitive threat from the regional fiber-optic carriers," said Joaquin Gonzalez, vice-president of Enterprise Network Strategies at Gartner Group, Inc. in Stamford, Conn.

"AT&T realizes the need to price its T-1 service somewhere in the same cosmos as the fiber carriers. AT&T's T-1 rates are much higher than the competition, and the new discount plan will narrow that differential," Gonzalez said.

William Rich, a telecommunications analyst with Northern Business Information, Inc. in New York, echoed Gonzalez' comments. "AT&T's new volume discount plan is designed to lock the customer into AT&T's service for several years, to the detriment of AT&T's competitors," Rich said.

"AT&T has become more creative and flexible in its pricing, and this is indicative of the dog fight among carriers for large business customers. AT&T has shown us that it isn't just going to roll over and play dead," Rich said.

AT&T currently has 2,503 T-1 circuits and 738,656 circuit miles in use, which generate $214 million annually in revenue. AT&T anticipates that, due to increased demand generated by the pricing option, the number of T-1 circuits will expand to 3,156, and the number of circuit miles will grow to 989,713.

The carrier estimated that revenue will increase by $47 million to a total of $261 million in 1988, according to the filing.

US Sprint to sell microwave net

continued from page 4

handle billing chores.

Since its formation last year, US Sprint has grappled with merging the different billing systems used by GTE and United Telecom.

"We were just overwhelmed by trying to combine the billing systems, which is itself a gigantic task, and at the same time trying to support 2.5 million new customers on the systems," Furtney said. "The process took a good deal longer than we anticipated."

US Sprint has received the most customer complaints about the delays in getting payments and misdialed calls credited to accounts, Furtney noted. "We now have the credit backlog down to a point at which customers should receive credits they are owed in this month's or next month's bill," he said.

Jeff Close, a senior consultant with the Ann Arbor, Mich.-based DMW Group, Inc., said, "US Sprint probably will have the bulk of its billing in place on time, but I'm sure some problems will arise. Nonetheless, the company is reasonably good at keeping promises — I don't expect them to make a mess of this."

Furtney acknowledged that the billing system "isn't perfect" and that some customers may still have problems, but he said US Sprint's track record for billing will be "even better" by the end of the year.

AT&T studies new services

continued from page 1

scriptions and Questionnaire," but declined to elaborate on its plans. The carrier also declined to comment on how many users received the 18-page booklet, which was distributed in late July.

The two switched digital services under consideration, Accunet Switched 64 Restricted and Accunet Switched 384, represent an evolutionary step from the Accunet Switched 56 service offered today to the circuit-switched digital capability of the Integrated Services Digital Network, the survey said. Both services require use of transmission facilities configured to support the ISDN Primary Rate Interface standard. The Primary Rate Interface segments the 1.54M bit/sec capacity of T-1 transmission facilities into 23 64K bit/sec traffic bearing B channels and a 24th D signal channel of the same speed.

The D channel provides a common channel for signaling, leaving the full 64K bit/sec capacity of the B channels for transportation of voice, data or other information (see graphic on page 1).

The survey said Accunet Switched 64 Restricted would be the first service to support the 64K bit/sec ISDN B channel standard transmission rate.

To access the service, customers will require an Accunet T1.5 circuit conditioned to support the ISDN Primary Rate Interface. Use of the D signaling channel within the Primary Rate Interface would enable 64K bit/sec digital circuits to be established on a call-by-call basis, providing the switched concept behind the service.

"This requires a commitment to ISDN and a substantial investment in premises equipment and software, including an ISDN-compatible digital PBX," the questionnaire said.

The service, which AT&T said will be fully compatible with Accunet Switched 56, "can utilize ISDN capabilities such as call-by-call service selection, caller identification and User-to-User Information (Message Associated)," according to the survey. The service will share the existing node-to-node digital network currently used for Accunet Switched 56 service.

The survey said the service would be ideal for bandwidth-greedy applications such as bulk data transport, computer-aided design and manufacturing, enhanced teleconferencing, secure voice and other applications.

Accunet Switched 384 will be made possible by amalgamating six contiguous 64K bit/sec ISDN B channels within a T-1 pipe.

Service access will require use of an Accunet T1.5 circuit configured to support the ISDN Primary Rate Interface.

Although the access circuit is dedicated, customers will be able to establish 384K bit/sec links on a call-by-call basis using ISDN D channel signaling to capture six B channels.

The other B channels within the T-1 pipe can be used to support other applications, as can the B channels used to support the 384K bit/sec link once the temporary circuit is torn down.

Intended applications for the service include bulk data transfer and high-quality video transmission, among others.

The survey said transmission will take place in real time so there will be no need to reserve net capacity. Both proposed Accunet services will be billed on a usage-sensitive basis.

The third service, Accunet T1.5 with Clear Channel Capability, will provide customers with greater bandwidth within individual T-1 channels — 64K bit/sec vs. the 56K bit/sec currently supported.

This will be made possible by removing the 1s density requirement, an AT&T requirement imposed to ensure that digital transmissions include enough binary 1s to keep the network on track. Long strings of binary 0s can cripple a T-1 or lower speed digital link.

Use of Accunet T1.5 with 64 Clear Channel Capability, "may require the modification of certain T-1 network interface equipment and software on the customer's premises, such as T-1 multiplexers," the survey said.

AT&T would not detail what modifications might be required, saying only that they may entail introduction of Binary 8 Zero Substitution encoding, a new technique AT&T uses to prepare strings of data for transmission across the network.

Besides increased capacity, the new service would be fully compatible with European standards, including those for voice compression, the questionnaire said.

The last of the four possible services, dubbed 64KBPS Dataphone Digital Service with Clear Channel Capability, will support a 64K bit/sec channel for use with data and/or voice and compressed voice, according to the survey. The highest speed DDS offered today is 56K bit/sec. The 64K bit/sec service would offer higher throughput and compatibility with European standard transmission rates.

AT&T said the service would be as reliable as existing DDS, providing an average performance of at least 99.5% error-free seconds at all transmission speeds.

The 64K bit/sec clear channel DDS circuits could also be used as tributary circuits into a network of Accunet T1.5 with 64 Clear Channel Capability facilities.

AT&T notes that modification of current 56K bit/sec channel service units and data service units would be necessary to accommodate this service.

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